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Air transport services in regional Australia: Trends and access

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Foreword

In recent years, there has been much debate over the adequacy of scheduled air services to and from regional communities. Policymakers at different levels of government have faced issues regarding the viability, sustainability and accessibility of air services in some parts of regional Australia. BITRE considers that an evidence-based approach to understanding the temporal profile of the regional aviation industry may play a useful role in informing both policy development and the industry itself.

By amalgamating and optimising existing information, regional aviation data were collated for the first time into comprehensive time series statistics using a geographical approach. The report used the constructed database to showcase analyses on several aspects of the regional aviation industry over time. It provides comprehensive data analyses of regional aviation trends, geospatial analyses on the accessibility of regional air services, projections of future regional aviation trends, and explorations of possible associations between key socio-demographic factors and the level of access to air services in regional communities.

Through the development of a consistent historical database for regional aviation, this study establishes a platform for more future research in regional aviation. The database offers flexibility to conduct various cross sectional or time series analyses; potentially in conjunction with other data sources.

This project was undertaken by Poh Ping Lim under the supervision of Dr David Gargett and Phil Potterton. The assistance and input offered by Gary Dolman, Jonathan Firth, David Mitchell, Dr William Lu, Dr Afzal Hossain and Quentin Reynolds in reviewing the final draft are greatly appreciated. Acknowledgement also goes to Scott Stone for his contribution during the early stages of the project and Rob Stewart for his involvement in the final stages of the project.

Phil Potterton
Executive Director
Bureau of Infrastructure, Transport and Regional Economics
April 2008

At a glance

- Revenue passengers carried on regional air routes rose from 6.5 million in 1984 to 16 million in 2005. As a whole, the regional aviation industry grew at an average annual growth rate of 4.4 per cent.
- Growth in revenue passengers varied across different segments of the regional aviation market over time. Between 1984 and 2005, the average annual growth rates for different market segments of the industry were:
  - High density regional routes: 7.9 per cent

    These routes are primarily between major cities and major tourist destinations and are often operated by major airlines using high capacity aircraft.
  - Other regional routes: 2.5 per cent
    - Major cities to regional areas: 4.2 per cent (excluding high density regional routes)
    - Regional areas to regional areas: –1.5 per cent

  These contrasting trends between passenger growth on major cities–regional routes and regional–regional routes are particularly marked over recent years. Similarly, high density regional routes have also grown more strongly since 2000.
- The total number of regional airports served by airlines declined from 278 in 1984 to 170 in 2005. Based on the Australian Standard Geographical Classification (ASGC) Remoteness Structure, the number of airports in very remote Australia experienced the steepest decline. Despite the significant fall over time, there remained a higher number of airports in very remote Australia than in other ASGC Remoteness classes of regional Australia.
- In 2005, 50 per cent of regional air routes had an average of less than three return flights per week, 40 per cent of regional air routes carried less than 1000 passengers a year, 50 per cent of regional air routes had distances of less than 400 km, and 80 per cent of regional air routes were served by a single operator.
- Regional routes where air services ceased generally share the following characteristics: flight frequency of once a week or less, route density of less than 1000 revenue passengers a year and route distances of 200 km or less.
- Projections of possible future trends between 2005 and 2016 for passenger movements on regional air routes show the contrasting trends between major cities–regional routes and regional–regional routes are likely to continue.
- In 2005, the spatial analysis in this report suggests that a high proportion of population (98 per cent) in Urban Centres/Localities (UC/Ls) were located within an assumed reasonable access distance to some form of regular scheduled air services. Those UC/Ls with no close access to regular scheduled air services were mostly found among the small communities.
- Overall, airlines serving regional air routes have gradually moved towards the use of larger aircraft. Scheduled jet flights on regional routes have also increased in recent years.
- The level of market concentration in the industry has increased over time. Fewer airlines account for a growing industry output. The industry is churned by a high attrition rate of airlines and regional air routes. Of the 35 airlines serving regional airports in 2005, only five had operated continuously since 1984. Many regional air routes, particularly between regional areas (mostly low volume and short routes) were rationalised over the years.

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Background

In recent years, there has been much debate over the adequacy of scheduled air services to and from regional communities. Policymakers at different levels of government have faced issues regarding the viability, sustainability and accessibility of air services in some parts of regional Australia. BITRE considers an evidence-based approach to understanding the temporal profile of the regional aviation industry may play a useful role in informing both policy development and the industry itself.

This study consolidated data from 1984 to 2005 and developed a comprehensive database for regional aviation analyses. Using the constructed time series data, the study analysed various aspects of the regional aviation industry.

Objectives of the study

The purpose of this study is to construct a consistent and comprehensive database in regional aviation, allowing for analyses over time. By amalgamating and optimising the existing information, the study seeks to:

- provide a better understanding of the state of the industry by identifying important historical trends and issues associated with the industry
- better inform policy choices by assessing where the industry may be heading in the medium to longer term.

Analyses undertaken using the constructed dataset include:

- in-depth analyses of historical trends in regional aviation
- geospatial analyses on the accessibility of air services in regional communities
- projections of future trends for air passenger movements on regional air routes
- explorations of possible associations between key socio-demographic factors and the level of access to air services in regional communities.

Scope and definitions

Consistent with the definition used in BTRE (2003a), regional air services in this report refer to all regular scheduled air services, either to or from non-metropolitan areas. Thus, the scope of this study is limited to all regular scheduled air services:

- between metropolitan areas and regional areas; or
- between regional areas.

The definitions of metropolitan and regional areas are based on Australian Standard Geographical Classification (ASGC) Remoteness Structure. This classification broadly divides the country into five region types. They are: major cities, inner regional Australia, outer regional Australia, remote Australia and very remote Australia (see Figure 1.1 on page 9). According to the classification, metropolitan areas are categorised under the major cities class and regional areas constitute the other four classes (that is, inner regional, outer regional, remote and very remote Australia).

In this study, regional airports refer to all airports that are located in regional areas according to the ASGC Classification. Regional air routes refer to all air routes that provide regular scheduled air services either to or from regional areas.

Data sources

The primary data source for this study was the Air Transport Statistics (ATS) database. The ATS database has been maintained by the Aviation Statistics section (AvStats) of BITRE. It contains a compilation of statistical returns collected for international, domestic, regional and general aviation since 1984. The ATS collection includes various key variables for the Australian aviation industry. Hence, it provides a rich base for assembling time series data in regional aviation.

Other sources of data used in this study include the ASGC Remoteness data and some socio-demographic data from the ABS Census in 1991, 1996 and 2001.

Report outline

The organisation of this report is as follows:

Chapter 2 provides an overview of historical trends in air services at regional airports, airlines serving regional airports and aircraft fleets used at regional airports.

Chapter 3 reviews the performance of regional air routes over time.

Chapter 4 evaluates changes in access to regional air services.

Chapter 5 presents projections of future trends for passenger movements on regional air routes.

Chapter 6 examines possible associations between key socio-demographic factors and the level of access to air services in regional communities.

Key findings

Historical trends in regional aviation

1. **Passenger growth at regional airports**

   - An upward trend in the number of passenger movements at regional airports.

   Passenger movements at regional airports rose from 8.5 million in 1984 to 17.5 million in 2005, an average annual growth rate of 3.5 per cent. Notably, with recovery from the post Ansett collapse downturn in 2001, the annual growth rate was 18.3 per cent from 2003 to 2004 and 14 per cent from 2004 to 2005.

2. **Number of regional airports**

   - A downward trend in the number of regional airports served by airlines.

   The total number of regional airports served by airlines fell from 278 airports in 1984 to 170 airports in 2005.

3. **Distribution of passenger movements by the ASGC Remoteness Classification**

   - The number of passenger movements in every ASGC Remoteness Class of regional Australia exhibits a generally upward trend.

4. **Distribution of regional airports by the ASGC Remoteness Classification**

   - The number of regional airports served in every ASGC Remoteness Class of regional Australia exhibits a general downward trend.

   Over the past 22 years, very remote Australia experienced the greatest reduction in the number of regional airports served by airlines, followed by remote Australia, outer regional Australia and inner regional Australia. Despite the significant fall over time, there remained a higher number of airports in very remote Australia than in other AGSC Remoteness classes of regional areas.

   The increases in passenger movements at regional airports, coupled with the decline in the number of regional airports over the years, resulted in a pronounced upward trend in the average annual passenger movements per regional airport.

5. **Airlines serving at regional airports**

   - The number of airlines serving regional airports displays a general downward trend.

   The level of market concentration in the industry has increased over time. In 1984, regional airports were served by 52 airlines and processed 8.5 million revenue passengers. In 2005, regional airports were served by 34 airlines and processed 17.5 million revenue passengers. There are fewer airlines accounting for a growing industry output.

   There has also been significant churn in airlines serving regional airports over the years. Out of 34 airlines serving regional airports in 2005, only five have continued to provide services since 1984.

Over the past 22 years, more than half of the regional airports were served by a single operator.

6. **Aircraft movements and aircraft fleets at regional airports**

   - While there were almost twice as many passengers in 2005 than in 1984, the number of flights was lower in 2005 than in 1984.
   - Before 1990, an average of 40 per cent of scheduled flights to and from regional airports was performed by aircraft with fewer than 18 seats. This proportion fell to less than 20 per cent in the last few years of the study period.
   - Aircraft with 30 to 100 seats have continued to dominate aircraft movements since 1994.
   - There has been an increase in aircraft movements by high capacity aircraft and aircraft with take off weights of 21 tonnes or more.

   Overall, the industry is moving towards using larger aircraft to serve regional airports.

Performance of air services on regional air routes

1. **Passenger growth on regional air routes**

   - A clear upward trend in the number of revenue passengers on regional air routes.

   Revenue passengers carried on regional air routes rose from 6.5 million in 1984 to 16 million in 2005. The average annual growth rate was 4.4 per cent for all regional air routes versus 6.2 per cent for air routes between major cities.

   Within regional aviation:

   - An upward trend in the number of revenue passengers on air routes between major cities and regional areas.
   - A downward trend in the number of revenue passengers on air routes between regional areas.

   The proportion of revenue passengers on air routes between regional areas in the overall regional market decreased from 32 per cent in 1984 to 9 per cent in 2005.

   - Growth in revenue passengers has varied across different segments of the regional aviation market over time. Below shows a summary of the average annual growth rates for different market segments of the industry between 1984 and 2005:
     - High density regional routes: 7.9 per cent

       These routes are primarily between major cities and major tourist destinations and are often operated by major airlines using high capacity aircraft.
     - Other regional routes: 2.5 per cent
       - Major cities to regional areas: 4.2 per cent (excluding high density regional routes)
       - Regional areas to regional areas: –1.5 per cent

These contrasting trends between passenger growth on major cities–regional and regional–regional routes are particularly marked over recent years. Similarly, high density regional routes have also grown more strongly since 2000.

Between 2000 and 2005, passenger numbers on air routes between regional areas had a negative annual growth rate of –6.2 per cent. In contrast, the average annual growth rate of revenue passengers on air routes between major cities and regional areas (including high density regional routes) was 8.9 per cent. Over the same period the average annual growth rate on high density regional routes alone was 12.1 per cent.

2. **Number of regional air routes**

   - A clear downward trend in the number of regional air routes.

   The number of regional air routes fell from 816 routes in 1984 to 415 routes in 2005, mostly due to declines in air routes between regional areas. Albeit a declining proportion over time, the number of air routes between regional areas has consistently constituted more than 50 per cent of all regional air routes.

   Overall, it is observed that many air routes between regional areas were rationalised over the years.

3. **Distribution of regional air routes in 2005**

   - *Flight frequency:* 50 per cent of regional air routes provided an average of less than three return flights per week.
   - *Route density:* 40 per cent of regional air routes transported fewer than 1000 revenue passengers per annum.
   - *Route distance:*
     - 80 per cent of regional air routes had distances of 1000 km or less. Of all regional air routes, 26 per cent had distances 200 km or less, 27 per cent had distances within 200 km and 400 km, 13 per cent had distances within 400 km and 600 km and 8 per cent had distances within 600 km and 800 km.
     - Regional air routes of 200 km or less show the steepest decline in number over the years.
     - While passenger numbers travelled on regional air routes in distance groups greater than 200 km has increased over the years, passenger numbers travelled on regional air routes in distance group of 200 km or less has declined.
     - In the last few years of the study period, passenger numbers travelled on regional air routes within 600 km to 800 km increased significantly. The number of revenue passengers travelled on these routes now exceeds the number of passengers travelled on regional air routes within 200 km to 400 km.
   - *Number of operators:* 80 per cent of regional air routes in regional Australia were served by single operators.

4. **Characteristics of regional air routes that experienced the greatest reduction in number over the years**
    - *Flight frequency:* once a week or less
    - *Route density:* less than 1000 revenue passengers a year
    - *Route distance:* less than 200 km.
5. **Load factor for regional air routes**
    - Load factors for all air routes between major cities and regional areas have consistently stayed above 70 per cent over the years.
    - Load factors for air routes between regional areas increased from below 60 per cent in the period before 1991 to around 70 per cent in recent years.
    - In 2005, the load factor was around 51 per cent for regional air routes of 200 km or less and 64 per cent for regional air routes within 200 km to 400 km.
6. **Highlights of trends in intrastate air routes and air services**
    - With the exception of the Northern Territory and Tasmania, all other states and territories generally exhibit an upward trend in the number of revenue passengers.

Access to regional air services[1]

In 2005:

- At least 97 per cent of the population (16.5 million people) who live in urban centres/localities (UC/Ls) were living within the assumed access distance to some form of regular scheduled air services.
- Of the remaining 3 per cent of the population (518 000 people) who live in UC/Ls located beyond the assumed access distance to any regular scheduled air services, close to 1 per cent (170 000 people) lived in a population size of less than 2000 people; 1.6 per cent (267 000 people) lived in a population size of 1999 to 20 000 people; and 0.5 per cent (81 000 people) lived in a population size of more than 20 000 people.
- Eighty one per cent of all UC/Ls (1377 UC/Ls) were within the assumed access distance to at least one airport.
- Of the remaining 19 per cent of all UC/Ls (332 UC/Ls) located beyond the assumed access distance to any airport: 16.3 per cent (279 UC/Ls) were in a population size of less than 2000 people; 3 per cent (51 UC/Ls) were in a population size between 2000 and 20 000 people and; less than 1 per cent (two UC/Ls) were in a population size between 20 000 and 100 000 people.
- At state and territory level, Victoria had the highest number of UC/Ls (109 UC/Ls) located beyond the assumed access distance to any airport. It also had the highest number of people (220 723 people) who lived beyond the assumed access distance to regular scheduled air services. Western Australia and Queensland also had fairly

1. The population and UC/Ls numbers used for the following results were estimated using the assumed distance of 40 km radius from small or rural airports and the assumed distance of 120 km radius from large or medium airports.

high numbers of UC/Ls (79 UC/Ls) and people in UC/Ls (130 313 people) located beyond the assumed access distance to regular scheduled air services. The Northern Territory has a lower number of UC/Ls (28 UC/Ls) and people in UC/Ls (13 796 people) that were located beyond the assumed access distance to regular scheduled air services. Tasmania and the Australian Capital Territory did not have any UC/Ls located beyond the assumed access distance to regular scheduled air services.

Projections of passenger movements on regional air routes

Based on extrapolations from existing trends, the general findings on the projection of passenger movements on regional air routes from 2005 to 2016 are as follows:

- *Interstate regional air routes:* With the exception of Queensland and Tasmania, most states and territories are projected to experience an average annual growth rate of 3 per cent to 4 per cent between 2005 and 2016. Queensland is projected to see an average annual growth rate of 5.3 per cent, while Tasmania has a lower projected average annual growth rate of 2.5 per cent in passenger movements on interstate regional air routes.
- *Intrastate regional air routes:* All states and territories are projected to experience substantial growth in passenger movements on intrastate routes between major cities and regional areas. In Queensland, passenger movements on intrastate routes between major cities and regional areas are projected to grow by an average of 2.5 per cent per annum. However, passenger movements on intrastate routes between regional areas are projected to decline by an average of 2 per cent per annum. Similarly, in Western Australia, passenger movements on intrastate routes between major cities and regional areas are projected to grow by an average of 2.1 per cent, while passenger movements on intrastate routes between regional areas are projected to decline by an average of 0.4 per cent per annum. Broadly, all other states and territories are projected to experience an average annual growth rate of around 1 per cent in passenger movements on intrastate regional air routes.

Factors affecting air services in small communities

In 2005:

1. **Population in UC/Ls and access to airports**

   Population with access to large airports

   - Approximately 90 per cent of the population in 992 UC/Ls was within the assumed access distance to at least one large airport.
   - Of the 992 UC/Ls with access to large airports, 727 UC/Ls were in a population size of less than 2000 people.

   Population with access to medium, small and rural airports

   - Nearly 7 per cent of the population in 385 UC/Ls only had access to medium, small or rural airports.
   - Of the 385 UC/Ls with access to medium, small or rural airports, 299 UC/Ls were in a population size of less than 2000 people.

In total, close to 80 per cent of the total number of UC/Ls with a population of less than 2000 people (5.3 per cent of the total population in UC/Ls) were within the assumed access distance to some form of regular scheduled air services.

In fact, close to 60 per cent of the total number of UC/Ls in a population size of less than 2000 people were within the assumed access distance to at least one large airport.

Population without close access to airports

- Of the 3 per cent of the population in 332 UC/Ls located beyond the assumed access distance to any airport that provides regular scheduled services, 279 UC/Ls were in a population size of less than 2000 people.

There is a clear association between those UC/Ls without close access to an airport and population size. The number of UC/Ls without close access to airports increases as the population size decreases. Noticeably, larger airports tend to be located near major population centres.

2. **Average weekly individual income group in UC/Ls and access to airports**

   - Overall, close to 92 per cent of the population in UC/Ls around large airports had an average weekly income between $400 and $600.
   - Most of the population in UC/Ls distributed around medium, small and rural airports or those without close access to airports also had an average weekly income between $400 and $600. However, between 18 per cent and 37 per cent of the population around medium, small and rural airports or those without close access to airports, received a lower average weekly income of $200 to $400.
   - Half of the UC/Ls without close access to any airports had a lower average income of $200 to $400.

   Broadly, the distribution of population in UC/Ls by income group for those who live beyond the assumed access distance to any airport is similar to those who lived in UC/Ls within the access distance to medium, small or rural airports.

3. **Passenger movement projections and access to airports**

   - The number of UC/Ls within the assumed access distance to airports that were projected with negative passenger movements increases as the population size decreases.
   - Relatively, the proportion of the population in UC/Ls with lower income is higher around airports with negatively projected passenger movements than airports with positively projected passenger movements.
   - The proportion of full-time workers in UC/Ls is slightly lower around airports with negatively projected passenger movements than airports with positively projected passenger movements.

4. **Air services at small and rural airports**

In 2005:

Flight frequency

- 95 per cent of all large airports, which covered 90 per cent of the UC/Ls' population, provided an average of more than four return flights per day.
- All medium airports, which covered 4.72 per cent of the UC/Ls' population, provided an average of one daily return flight or more.
- 85 per cent of all small airports, which covered 0.8 per cent of the UC/Ls' population, also provided an average of one daily return flight or more.
- 80 per cent of rural airports, which covered 1.3 per cent of population from UC/Ls' population, provided an average of less than one return flight a day.

While there were 20 large regional airports accounting for 78 per cent of the total passenger movements at all regional airports in 2005, there were 81 rural regional airports accounting for only 1.16 per cent of the total passenger movements.

The sparseness and remoteness of most UC/Ls near rural airports means that most of the rural airports lack the passenger demand to increase flight frequency.

Number of operators

- around 68 per cent of all regional airports were served by a single operator
- more than 90 per cent of all rural airports were served by a single operator.

Due to small market sizes, it is likely that most of the rural airports lack the traffic volume required to attract more than one airline.

Aircraft type

- The frequency of using low capacity aircraft increases as the airport size decreases.
- The proportion of flights using aircraft with one hundred seats or more at large airports is higher relative to airports of smaller sizes.
- Both large and medium airports have a high percentage of flights using aircraft with 30 to 100 seats.
- Small airports appear to have a fairly even mixture of flights using aircraft ranging from 18 seats to 100 seats.
- More than half of flights to and from rural airports were using aircraft with less than 18 seats, followed by a third of the flights using aircraft with 18 to 29 seats.
- Close to 60 per cent of all flights to and from large airports used jet aircraft. Most of the flights to and from medium, small and rural airports used turboprop aircraft. Around 40 per cent of flights to and from rural airports used piston-driven aircraft and the other 40 per cent used turboprop aircraft.

- Approximately 20 per cent of flights to and from rural airports used jet aircraft.

Overall, the airline industry shows a good match between aircraft size and targeted market size.

Chapter 1

Introduction

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Chapter 1 Introduction

1.1 Key current issues

Over 15 years after the enactment of the Airline Agreement (Termination) Act 1990, regional aviation is now at the forefront of public policy. In recent years, there has been much debate over the adequacy of scheduled air services to and from regional communities. Policymakers at different levels of government have faced issues regarding the viability, sustainability and accessibility of air services in some parts of regional Australia.

1.2 An overview of policy background

The Australian aviation industry was deregulated in October 1990. The deregulation ended 30 years of government controls in capacity, airfares and entry to the industry. As part of the microeconomic reform agenda in Australia, the deregulatory legislation was introduced to seek improvement in air service quality, promote competitive air fares and encourage efficient operators in the industry. These objectives were to be achieved by:

- reducing barriers to entry
- encouraging fair competition
- avoiding interventions that favoured one business over another
- supporting industry and regional communities as they adjusted to changes in the market.

Under the deregulated environment, *interstate* regional air services have been largely operating within the broader competition policy controls that apply to other industry sectors.

Regulations for *intrastate* regional air services remain in the province of individual states and territories. The policy and regulatory environments vary between states. Victoria, Tasmania, Australian Capital Territory and Northern Territory have withdrawn regulations of intrastate aviation services, while New South Wales, Queensland, South Australia and Western Australia retain some regulatory restrictions and/or subsidies for some services.

In addition to the regulatory interventions that influence regional air service markets in several states, there are other interventions at all levels of government. At the national level, the Australian Government provides assistance to remote communities through the Remote Air Service Subsidy (RASS) Scheme. The Australian Government has also provided assistance through the Rapid Route Recovery Scheme to former Ansett regional affiliates following the collapse of the parent airline and continues to subsidise air services charges through the Enroute Charges Rebate Scheme for

certain regional aircraft operations. Some assistance has been provided to aviation or airport-related projects through the Regional Partnerships Program. Since 2005, the Australian Government has directed $35 million to improve security measures in regional airports through the Regional Airports Funding Program (RAFP).

At the state level, several states provide direct assistance to airport development through programs such as the Queensland Rural and Remote Airport Development Program and the Western Australian Regional Airports Development Scheme. Other programs, such as the Queensland Investment Incentives Scheme, have been used to provide incentives to aviation-related investment in that state.

At the local government level, many regional airports are owned and operated by local governments and councils. Airports are able to offer incentives through subsidised charges or risk-sharing agreements with operators to encourage the provision of services to their local area.

The rationale for the continuation of these government interventions after deregulation was primarily:

- to ensure provision of 'essential' regular scheduled air services on certain non-viable regional air routes
- to promote stable and consistent regular scheduled air services in small viable markets (Johnston, A. and Trembath, A. 2005).

Following the collapse of Ansett services in 2001, the Australian Government stated that its support for market based aviation policies rests strongly on the premise of:

- a safe, secure and sustainable aviation sector
- price and service competition for consumers where possible
- reasonable access to services for regional communities (Ministers for Transport and Regional Services 2005).

1.3 An overview of post-deregulation studies

There has been considerable debate about the successes and failures of air services in Australia since airline deregulation. Numerous studies have looked at the impact of deregulation. Fourteen months into deregulation, Grimm and Milloy (1993) regarded it to be successful as initial evidence suggested that consumers had benefited from lower fares and better quality air services. Smith and Street (1992), in an attempt to estimate economic welfare changes using a simulation model, concluded that there were indicative net welfare gains from deregulation. According to an Australian Competition and Consumer Commission survey of developments (ACCC 1996), deregulation greatly enhanced consumer welfare. The ACCC reported that fares were lower, ticket options were more flexible and frequency of flights had improved. This was true especially on trunk routes where seating capacity expanded and airlines were flying to more destinations.

While Quiggin (1997) agreed that deregulation had made discount fares more widely available, he asserted that the distributional effects were unclear and there was no evidence of dynamic efficiency gains arising from deregulation.

Others claimed that, a decade after deregulation, safety standards had fallen, services to regional areas were in crisis and the quality of air services had deteriorated (Dellit 2002). More recently, the Neville report identified issues that are reducing and destabilising regional air services as direct or indirect consequences of deregulation (The Parliament of the Commonwealth Australia 2003). The Regional Aviation Association of Australia (RAAA) has also repeatedly claimed that many air services to regional communities are critically under threat.

Overall, the BITRE regional air transport time series estimates, as presented in the following chapters[2], show that there has been a strong and steady passenger growth in domestic and regional aviation since deregulation. On the other hand, there is also evidence that this growth has varied significantly across different geographical locations in Australia. The number of regional air routes served by regular scheduled air services has declined dramatically since deregulation, shrinking in both number and geographical coverage. The time series data also shows that the number of airlines serving regional air routes and the number of regional airports have both declined in the past decade. It is also evident that the level of market concentration in the industry has increased over time. Fewer airlines account for a growing industry output.

On the policy front, there has also been a significant collection of literature. These studies are largely by government agencies addressing government interventions in the provision of air services to regional Australia after deregulation. Such studies range from the Industry Commission Report on Intrastate Aviation in 1992, which recommended complete economic deregulation, to the more recent Neville Report in 2003, which recommended more government involvement in the provision of regional air services in a number of areas.

Other recent studies, such as National Economics (2004), argue that regional economic performance is strongly linked to the performance of the regional aviation industry. The National Competition Council has proposed a valuable framework for identifying essential questions that policymakers must face when dealing with interventions in the regional market (Johnston and Trembath 2005). BITRE has also conducted several studies to assist policy development in regional aviation in Australia. These include an investigation of the competitiveness of the regional aviation industry (BTE 2000), research into long distance regional public transport across all modes (BTRE 2003a) and a comprehensive review of government interventions in regional public transport (BTRE 2003b).

The divergence of evidence and opinions in studies related to the state of regional aviation indicates that conditions in the industry have varied across different segments of the market over time. There has also been an issue of blurred boundaries between regional and main trunk air services. Inconsistencies in definitions when referring to regional airlines, air routes or airports have made meaningful comparisons between past studies difficult. Inconsistencies in definitions have also constrained the extent of time series analysis on regional aviation. This demonstrates the need to standardise definitions and maintain the comparability of historical data for the industry.

2. These statistics were estimated based on definitions used in this study. Details of definitions for regional airports and regional air routes are in Section 1.6.

1.4 Project rationale

There are two main rationale for this study:

- to inform future policy choices in regional aviation
- to provide consistent data to support such policy making.

The importance of policy choices

Variations in demand and supply of regional air services across different geographical locations mostly arise from differences in community size and economic factors that influence both consumer choice and the provision of air services. In an open economic system (the deregulated environment), the demand for air services in a community often depends on the population base surrounding an airport, its socio-economic characteristics (such as local income and economic activity), the quality and type of air services available at the airport and the distance to the nearest competing airport between communities. These are some of the contributing factors that affect the level of air service desired in a community or a region, and the price people are willing to pay to obtain it. Also, the supply of air services to a market is determined by a range of economic factors that affect an airline's decision on where and how to implement services (e.g. aircraft type and capacity, flight frequency). The number of competitors serving the same community or region, operating costs (such as labour, fuel, etc.), fixed costs, government policies and regulations, fleet distribution, airport expenses, relative market and route profitability are some of the important determining factors that create differences in the level of air services provided between communities.

Regional aviation supplies air services to a wide variety of communities, ranging from isolated areas with small populations of a few thousand and no scheduled air service, to urban areas with populations of several hundred thousand with multiple operators. Given these variations, it is to be expected that there will be differences in the barriers faced by different groups of communities in attracting or retaining air services.

Within the market for regional air services, the deregulated market appears to have largely met the policy aims in facilitating more flexible and lower-priced travel for regional air routes that are within a competitive structure. Under a deregulated environment, the airline industry tends to streamline and consolidate existing operations in a manner that makes economic sense. Motivated by the need to maintain profitability, the airline industry will attempt to maximise market efficiency in profitable market segments. The overall success of deregulation was mostly concentrated on the market segments with high to medium density regional air routes. Hence, we see reports on the success of deregulation. The mechanism of the free market effectively translates airlines' operational efficiency into an increase in transport efficacy and consumer benefits for a large part of the regional airline system. For this segment of the regional market, reverting to a regulatory system would be highly inefficient.

However, the profit-based system also means that market forces tend to work against smaller and less profitable routes. In this market segment, most communities typically lack the population base and level of economic activity to attract or retain commercially viable air services. In some cases, alternatives such as improved land transport access and access to other air services within driving distance diminish the viability, and also the necessity, of air services to these communities. In other cases, an air transport option for these communities, although essential, may not be commercially viable.

As discussed in Section 1.2, some low density regional air routes have continued to operate in a protected environment following deregulation. However, government interventions do not necessarily guarantee the provision of regional air services. Some small communities might continue to find it difficult to generate the level of demand needed to support a scheduled commercial air service, even with subsidies. The overall benefits of deregulation to the public often depend on the continued ability of policymakers to regulate ineffective market segments on the basis of efficiency and equity. This is a complex and multi-layered issue. As mentioned at the beginning of this section, there are a variety of factors, which may or may not arise from deregulation, that influence the sustainability and viability of regional air services. Often, government funding decisions on different modes of transportation also set the incentive pattern for the transportation behaviour of providers and individuals.

A key issue faced by policymakers is the need to determine the necessity and the level of support required to maintain reasonable access to air services in regional communities. The challenge for governments is to ensure that the costs of intervention do not outweigh the benefits of assisting non-viable air routes.

The need for consistent data to support policy making

In the past, industry activities in the regional aviation market have been traditionally measured by aggregating the transport task (such as passenger numbers, freight, hours and distance flown) carried out by regional airlines. These measurements are strongly dictated by how a regional airline is defined, which in turn determines which airlines are to be included or excluded from the measurement.

A regional airline used to be defined as:

> An airline performing regular public transport services and whose fleet contains exclusively low capacity aircraft with 38 seats or less, or with a payload of 4200 kg or less (BTRE 2003c).

In more recent years, the definition of a regional airline has been broadened in view of an increase in larger aircraft types being used on regional air routes. A regional airline is therefore currently defined as:

> An airline performing regular public transport services primarily to regional centres (BTRE 2006).

These changes in definitions could cause ambiguity and inconsistencies when an attempt is made to assemble historical data for analysis over time.

1.5 Objectives of the study

The purpose of this study is to construct a consistent and comprehensive database in regional aviation, allowing for analyses over time. By amalgamating and optimising the existing information, the study seeks to:

- provide a better understanding of the state of the industry by identifying important historical trends and issues associated with the industry
- better inform policy choices by assessing where the industry may be heading in the medium to longer term.

Analyses undertaken using the constructed dataset include:

- in-depth analyses of historical trends in regional aviation
- geospatial analyses on the accessibility of air services in regional communities
- projections of possible future trends for air traffic movements on regional air routes
- explorations of possible associations between key socio-demographic factors and the level of access to air services in regional communities.

Such information provides insights into which air routes are likely to be sustainable within a competitive structure and which are not. Information across time is needed to provide an important basis for examining and coordinating various aviation policies and regulations that are currently in place. It is also essential for determining the validity and appropriateness of government assistance which may be extended to some regional communities and not others.

1.6 Scope and definitions

Consistent with the definition used in BTRE (2003a), regional air services in this report refer to all regular scheduled air services, either to or from non-metropolitan areas. Thus, the scope of this study is limited to all regular scheduled air services[3]:

- between metropolitan areas and regional areas; or
- between regional areas.

Charter operations or other non scheduled passenger air transport services are excluded.

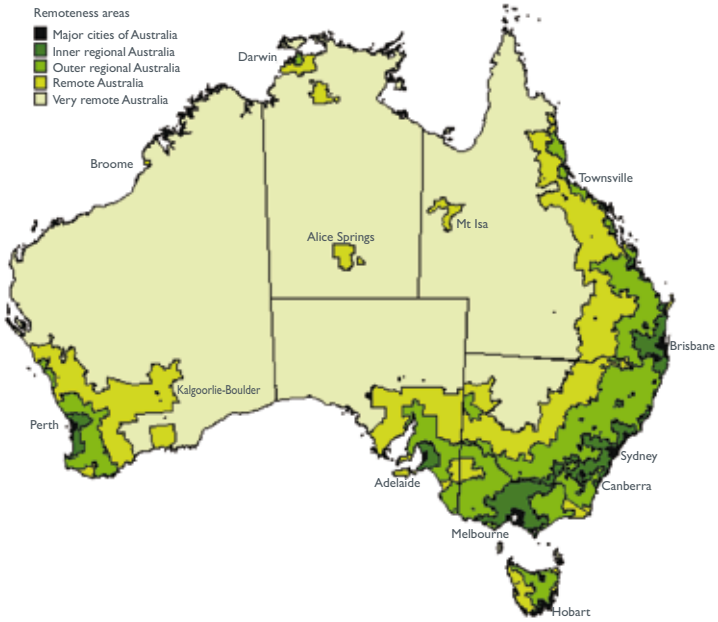
Both metropolitan areas and regional areas are defined according to the Australian Standard Geographical Classification (ASGC) Remoteness Structure.

The ASGC Remoteness Classification was developed by the Australian Bureau of Statistics (ABS) to allow for quantitative comparisons between 'city' and 'country' Australia. The difference between 'city' and 'country' is measured by the physical accessibility of a location to goods and services. ABS has adopted Accessibility/ Remoteness Index of Australia (ARIA) as the underlying methodology to determine the degree of remoteness for each census collection district (CD). The CD is the smallest geographic unit of the ASGC and it is from this building block that all other levels of the classification are aggregated (ABS 2001b).

The ASGC Remoteness Classification broadly divides the country into five region types (Figure 1.1). Under this classification, metropolitan areas are categorised under the major cities class and regional areas constitute the other four classes (that is, inner regional, outer regional, remote and very remote Australia). Table 1.1 shows a list of airports in major cities based on the ASGC Remoteness Classification from 2001.

3. Regular scheduled air services in this study refer to all air services operated to serve public members, for hire or reward and which are conducted in accordance with fixed schedules to and from fixed terminals over specific routes, with or without intermediate stopping places between terminals.

Figure 1.1 ASGC Remoteness Classification[4]



Sources: ABS 2001b and ABS 2001c.

Table 1.1 Airports in the major cities class under the ASGC Remoteness Classification, 2001

Airport	*State*	*Airport*	*State*
Canberra	Australian Capital Territory	Brisbane	Queensland
Belmont	New South Wales	Gold Coast	Queensland
Bankstown	New South Wales	Adelaide	South Australia
Gosford	New South Wales	Moorabbin	Victoria
Newcastle Seaplane	New South Wales	Essendon	Victoria
Parramatta	New South Wales	Melbourne	Victoria
Rose Bay	New South Wales	Tyabb	Victoria
Sydney	New South Wales	Fremantle	Western Australia
Wollongong	New South Wales	Perth	Western Australia
Archerfield	Queensland		

Sources: ABS 2001b and BITRE time series estimates.

In this report, regional airports refer to all airports that are located in regional areas according to the ASGC Remoteness Classification. Regional air routes refer to all air routes that provide regular scheduled air services either to or from regional areas.

4. ARIA Score by 2001 Census Collection District.

This definition applies to all regional airports with the exception of the regional airport in Avalon, Victoria. Under the ASGC Remoteness Classification, Avalon is located in inner regional Australia. However, there have been direct air services between Avalon and other major cities such as Sydney, Brisbane and Adelaide in recent years. As the distance between Avalon and Melbourne airport is only 52 km, it is clear that the increase in passenger movements between Avalon and other airports in major cities was largely sourced from the Melbourne metropolitan region. The inclusion of these statistics will distort the overall number of passenger movements in regional Victoria and, to a lesser extent, the overall national statistics in regional aviation. Hence, Avalon has been classified as an 'alternative airport' for Melbourne.

In this report, regional aviation industry activities are measured by aggregating the transport task (such as number of revenue passengers, number of flights, number of routes, hours and distances flown, etc.) performed by airlines serving on regional air routes as defined above.

Route distance between two regional airports in this report was based on the Great Circle Distance (GCD). The GCD is the shortest distance between any two points on the globe, measured over the earth's surface.

It is important to note that the statistics present in this report centre on air services in regional Australia. They are different from statistics reported in *Avline* (BITRE) on air services by regional airlines.

Box 1.1 shows the key differences between definitions used in this report and *Avline*, (BITRE).

Box 1.1 Key differences between definitions used in this report and *Avline* (BITRE)

Revenue passengers travelling on regional air routes referred to in this report should not be confused with revenue passengers carried by regional airlines reported in *Avline*.

Avline defines 'regional airlines' and 'domestic airlines' as follows:

- 'Regional airline' refers to an airline performing regular public transport services primarily to regional centres.
- 'Domestic airline' refers to an airline performing regular public transport services primarily between capital cities and major tourist centres.

The *Avline* definition measures passenger numbers carried by regional airlines. If a domestic airline takes over a regional air route served by a regional airline, the actual number of revenue passengers travelling on the same regional air route may or may not change. However, the number of revenue passengers travelling on regional air routes carried by regional airlines will show a decline. The importance of the measurement used in *Avline* is to reflect the fluctuations of passenger numbers on air routes served by regional airlines. These measurements are strongly dictated by how a regional airline is defined, which in turn determines passenger numbers of which airlines are to be included or excluded from the measurement.

This report focuses on measuring actual changes in passenger numbers travelled on regional air routes, independent of the airline classification. In this report, revenue passengers on regional air routes is defined as revenue passengers that travel on regular scheduled air routes either to or from regional areas. This includes:

- revenue passengers travelling on regional air routes between major cities and regional areas
- revenue passengers travel on regional air routes between regional areas.

The definition of regional air routes in this report is based on the ASGC Remoteness Classification. The basis of this definition maintains the consistency of measuring passenger numbers on regional air routes over time. Further disaggregations on regional air routes of various attributes are possible. For example, it is possible to disaggregate revenue passengers on regional air routes by aircraft seats or payload. This measurement will include all revenue passengers on regional air routes that satisfy the stated conditions, e.g. aircraft with more than 38 seats or with 38 seats or less.

Also, in this report, airport classification is used to provide an indicator of an airport size. There are basically four airport classes: large, medium, small and rural. An airport class is assigned to each regional airport by calculating the percentage of the total passenger movements of the airport to the total passenger movements of all regional airports in a year. The range of percentages used to classify the four airport classes is in Table 1.2.

Table 1.2 Airport classification

Airport classification	*Percentage of total passenger movements in a year*
Large (L)	1.00 or more
Medium (M)	0.25 to 0.999
Small (S)	0.05 to 0.249
Rural (R)	Less than 0.05

Source: BITRE classification.

Airport classification was used in analyses presented in Chapter 2 and Chapter 4 in this report.

This study does not attempt to cover every aspect of regional aviation. Rather, it centres on consolidating the historical regional aviation data in a consistent manner over the 22 year study period. Many key components of the data were included in this study. However, it is worth noting that air fares and other costing related information in regional aviation are difficult to access and limited across time. Hence, they have not been incorporated into this study.

1.7 Data issues

Data sources

The dataset constructed for this study was derived mainly from the Air Transport Statistics (ATS) database. The ATS database has been maintained by the Aviation Statistics section of BITRE. It contains a compilation of statistical returns collected for international, domestic, regional and general aviation since 1984. The ATS collection includes a selection of key variables for the Australian aviation industry. Thus, it provides a rich base for collating time series data for regional aviation.

Other sources of data used in this study include the ASGC Remoteness data and some socio-demographic data from the 1991, 1996 and 2001 ABS Censuses.

Data preparation

In order to undertake analyses over time, there is a need to construct a time series dataset for regional aviation which maintains consistency in both attributes and geography. That is, definitions of variables and geographical zones where the data required need to be the same for all time points of interest. This enables comparability between datasets and allows for comparative analyses across the years.

The final database contains many datasets with yearly data from 1984 to 2005. Each dataset was constructed by first extracting different levels of Australian air traffic data from the ATS database. It was then fitted into the predetermined scope and definitions as discussed in Section 1.4. All data were harmonised with the ASGC

Remoteness Classifications. Spatial information was incorporated in some datasets. This information is needed for geospatial analysis and mapping. Demographic data from the ABS Censuses were also merged (according to the ABS Geographical Classification) to form some final datasets. Each dataset contains different set of cross-sectional variables across time in the regional aviation industry. The data can be analysed at airport level, by air route, by aircraft type and by airline. It can also be cross-classified by state and territory, AGSC Remoteness Classification, Statistical Local Area (SLA) and airport classification.

Data quality issues

The constructed database has an extensive coverage of the regional aviation market. However, there are some data quality issues that are worth noting:

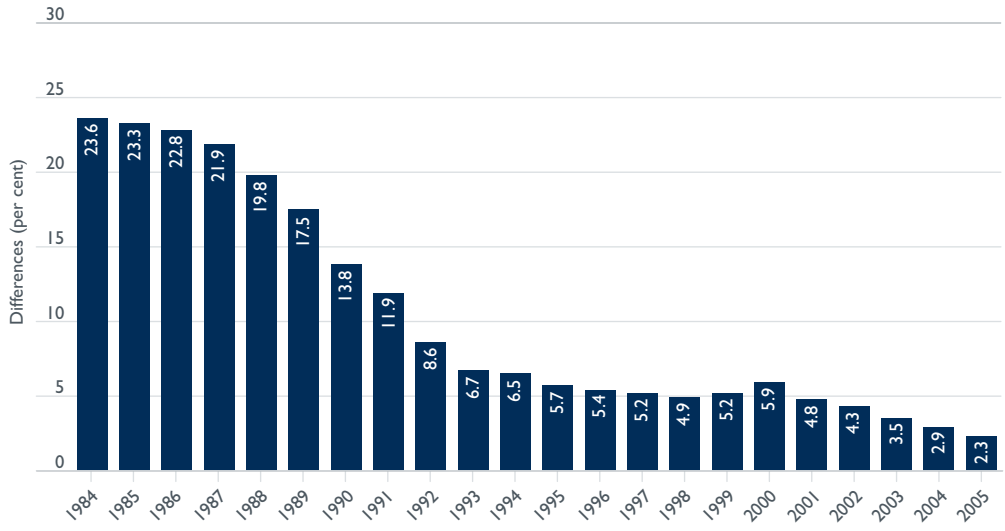
- Accuracy of the information is sometimes affected when erroneous data were collected or reported.
- Missing data between years could also cause misinterpretation in analyses. This is particularly a concern when some zeros in the dataset represented genuine zeros and some were actually missing values.
- Continuity of the time series was affected when data were collected in some years and not in others.

One other data constraint was that information on revenue passengers was not readily available by origin and destination (OD). OD data generally represents the actual scale of demand for air services reasonably well. A count of OD traffic depicts the actual trip undertaken by the passenger irrespective of the number of flight stages that constitute the journey. Without the OD data, a reasonable proxy is needed. Basically, the ATS data collects and estimates the number of revenue passengers using two approaches:

- traffic on board by stage (TOB) measures the number of revenue passengers on board for each flight stage
- uplifts and discharges (UD) measures the number of revenue passengers within the same flight number between two ports not necessarily directly connected.

Relative to TOB, UD provides a closer approximation of OD demand for air services (BTRE 2000). However, not all the airlines supply UD data so it was necessary to use TOB data. Thus it is important to note that, unless otherwise stated, all revenue passenger data used in this study is based on TOB data and the number of regional air routes estimated in this report is based on the number of flight stages. Figure 1.2 shows differences in percent between the aggregated TOB and UD estimates of revenue passengers carried on regional air routes over the past 22 years. TOB data have been consistently higher than UD data but the difference has reduced dramatically over the years.

Figure 1.2 Differences in per cent between TOB and UD data, 1984 to 2005



Source: BITRE time series estimates.

1.8 Report outline

The organisation of this report is as follows:

Chapter 2 provides an overview of historical trends in air services at regional airports, airlines serving regional airports and aircraft types used at regional airports.

Chapter 3 reviews the performance of regional air routes over time.

Chapter 4 evaluates changes in access to regional air services.

Chapter 5 presents projections of future trends for passenger movements on regional air routes.

Chapter 6 examines possible associations between key socio-demographic factors and the level of access to air services in regional communities.

Chapter 2

Historical trends in regional aviation

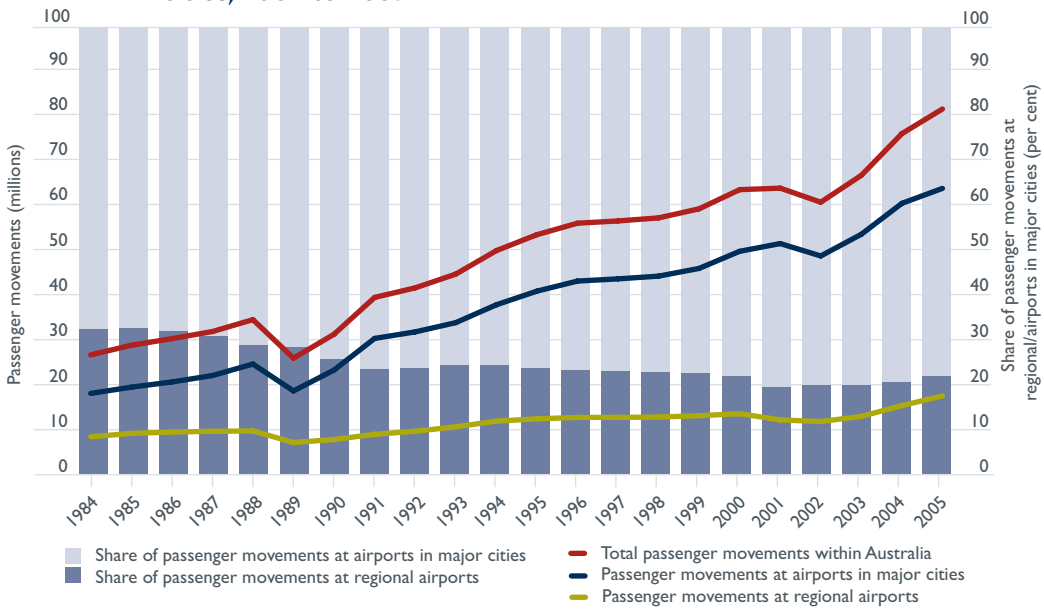
bitre

Chapter 2 Historical trends in regional aviation

This chapter presents an overview of the major historical trends in regional aviation at airport level. It encapsulates trends in air services at regional airports, airlines serving regional airports and aircraft used at regional airports in Australia from 1984 to 2005. Trends in regional aviation are also presented at state level.

Passenger movements at regional airports increased from 8.5 million in 1984 to 17.5 million in 2005, while passenger movements at airports in major cities increased from 18.1 million in 1984 to 63.4 million in 2005 (Figure 2.1). This represents an average annual growth rate of 3.5 per cent for regional airports versus 6.1 per cent for airports in major cities. Passenger movements at regional airports as a share of the total passenger movements within Australia were close to 30 per cent before 1990, and gradually decreased to around 20 per cent in the last few years of the study period.[5]

Figure 2.1 Passenger movements at regional airports and airports in major cities, 1984 to 2005



Source: BITRE time series estimates.

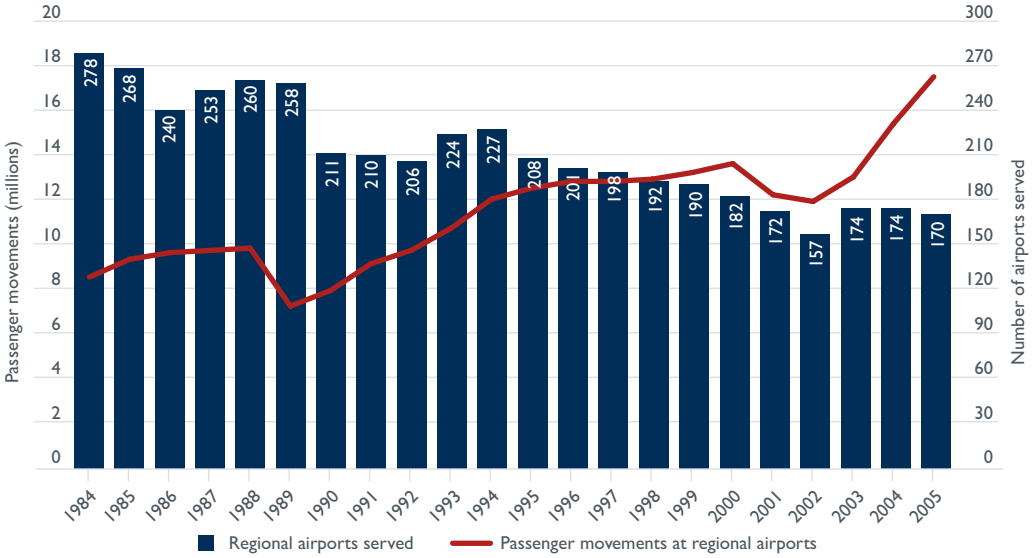
5. Passenger movements at regional airports included passengers travelling between airports in major cities and regional airports and passengers travelling between regional airports. In contrast, passenger movements at airports in major cities included passengers travelling between airports in major cities and regional airports and passengers travelling between airports in major cities.

2.1 Air services at regional airports

2.1.1 National level

Figure 2.2 reveals a clear contrast between an upward trend for passenger movements at regional airports and a downward trend for the number of regional airports served between 1984 and 2005. The number of passenger movements at regional airports increased by 9 million in the past 22 years, while the total number of regional airports served reduced from 278 in 1984 to 170 in 2005. On average, a regional airport used to serve around 31 000 passengers in 1984. This has increased to an average of around 103 000 passengers in 2005. These general trends imply that the underlying spatial distribution of passenger movements has changed over time. To gain some insights on how spatial distribution of passenger movements at regional airports has evolved over time, the trend analysis is further examined by using the ASGC Remoteness Classification.

Figure 2.2 Passenger movements at regional airports and number of regional airports served[6], 1984 to 2005

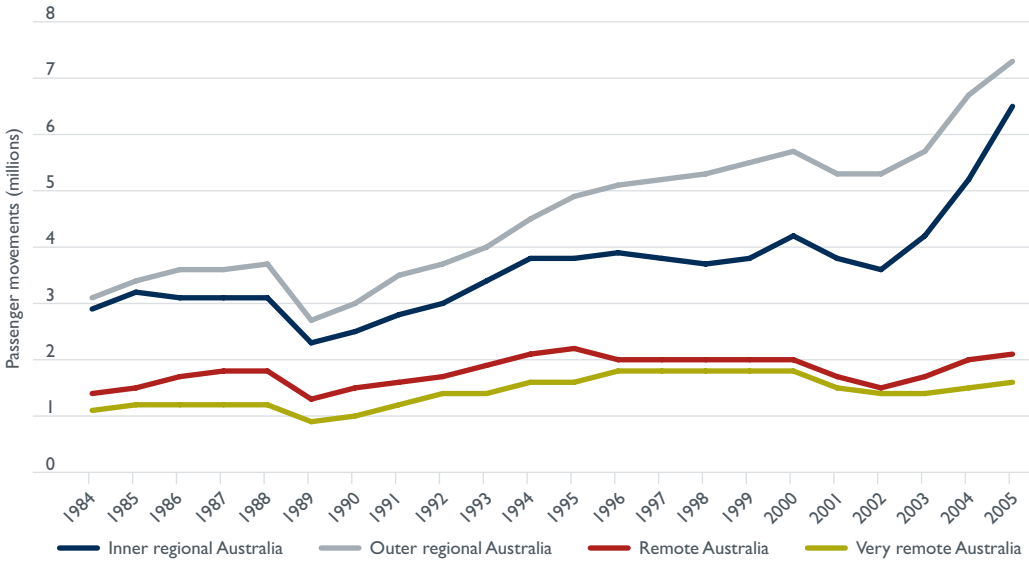


Source: BITRE time series estimates.

Figure 2.3 shows that passenger movements at regional airports have consistently been higher in inner and outer regional Australia, and lower in remote and very remote Australia. Between 1984 and 2005, the average annual growth rate of passenger movements was 4.2 per cent in outer regional Australia, 3.9 per cent in inner regional Australia, 2 per cent in remote Australia and 1.6 per cent in very remote Australia. From a historical perspective, there are four phases to these trends (Figure 2.4). The analysis below is presented using four interval periods over the past 22 years, leaving out 1989 and 1990 to abstract from the short term effects of the Australian pilots' dispute.

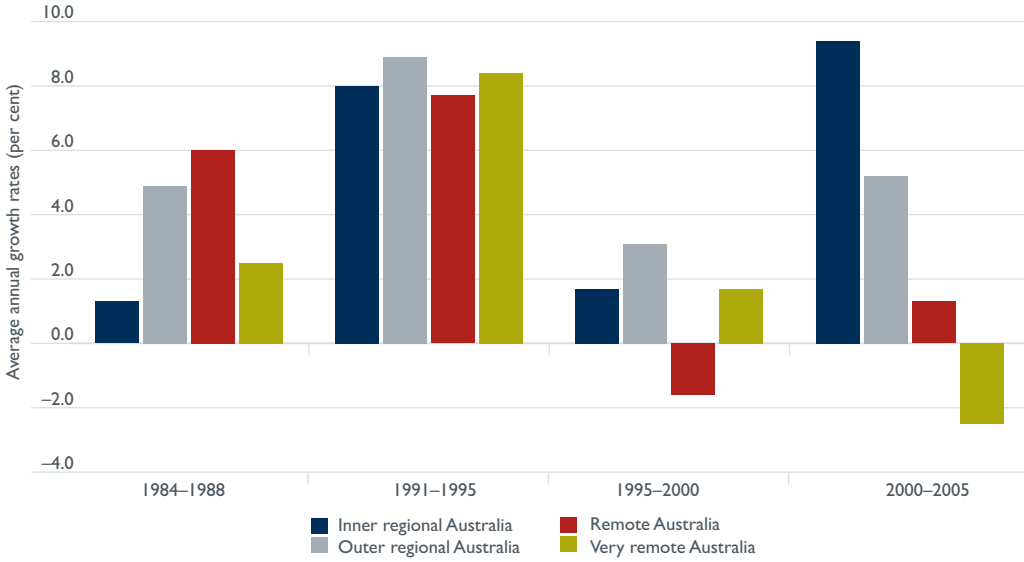
6. Regional airports served refer to all airports in regional areas with recorded passenger traffic.

Figure 2.3 Passenger movements at regional airports, by ASGC Remoteness Classifcation, 1984 to 2005



Source: BITRE time series estimates.

Figure 2.4 Average annual growth rate of passenger movements at regional airports, by ASGC Remoteness Classification, 1984 to 2005



Source: BITRE time series estimates, 1989 to 1990 omitted.

In the pre-deregulated period between 1984 and 1988, the growth of passenger movements at airports in all regional areas was gradual. Relatively, remote Australia experienced the fastest average annual growth in that period at a rate of 6 per cent per annum. The average growth rate was 4.9 per cent per annum in outer regional

Australia, and 2.5 per cent per annum in very remote Australia. Inner regional Australia experienced the slowest growth at approximately 1.3 per cent per annum.

Between 1989 and 1990, the Australian pilots' dispute caused a trough in the trend of passenger movements at regional airports, with negative growth rates ranging from –24 per cent to –28 per cent in all regional Australia.

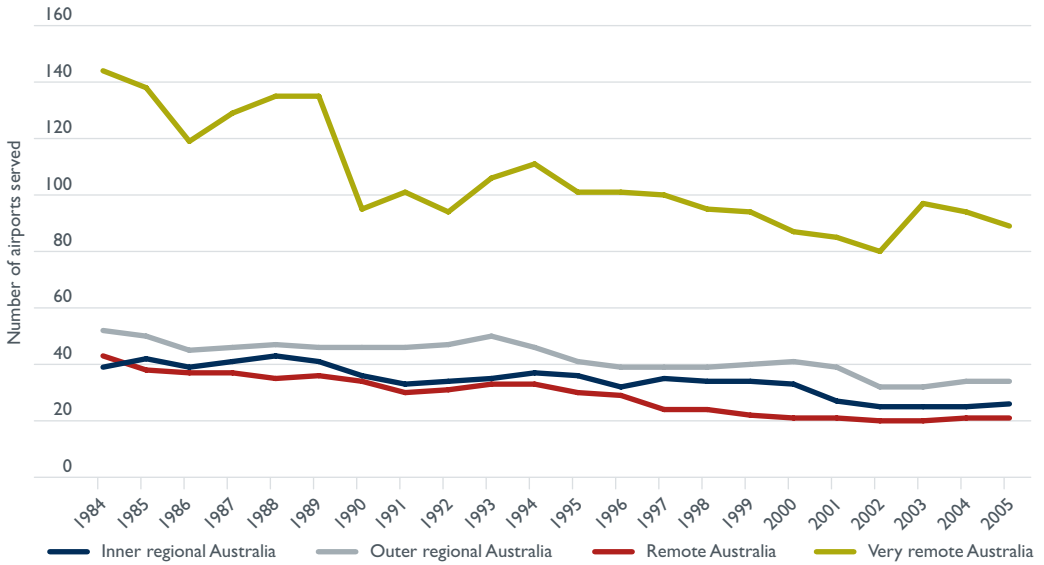
In the immediate post-deregulation period between 1991 and 1995, Australia experienced significant and well distributed growth in passenger movements at regional airports across all regional Australia. Each class of regional Australia experienced an average annual growth rate of 8 to 9 per cent.

However, between 1995 and 2000, the growth rate in all regional Australia took a downward shift. The average annual growth rate in outer regional Australia was the highest in the period at a modest 3.1 per cent per annum. The rate was lower in inner regional Australia and very remote Australia (both at 1.7 per cent per annum) and negative in remote Australia (–1.6 per cent per annum).

Between 2000 and 2005, revenue passengers travelling to and from remote Australia grew at an average rate of 1.3 per cent per annum. While the growth rate of passenger movements had been strong historically in outer regional Australia (an average of 5.2 per cent per annum), it was inner regional Australia that exhibited a record high with an annual average growth rate of 9.4 per cent in the post-Ansett period. However, the growth rate was negative in very remote Australia, at an average rate of –2.5 per cent per annum.

Figure 2.5 shows that the number of regional airports served in every ASGC Remoteness Class of regional Australia exhibits a downward trend over the period from 1984 to 2005. The figure also shows that very remote Australia had the greatest reduction in the number of airports served over the years. However, there were

Figure 2.5 Number of regional airports served, by ASGC Remoteness Classification, 1984 to 2005

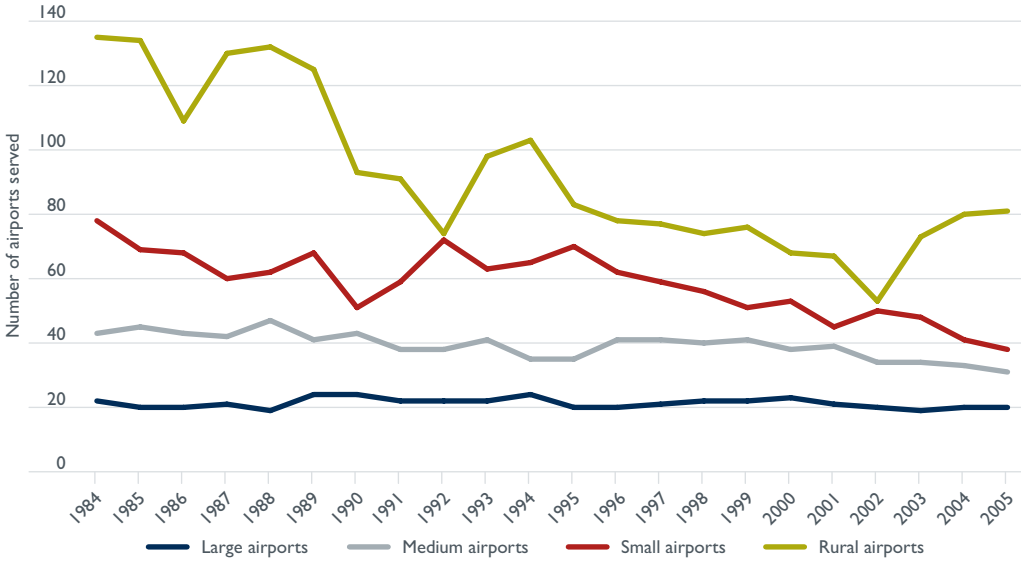


Source: BITRE time series estimates.

far more regional airports served in very remote Australia than any other ASGC Remoteness Class in regional Australia. In 1984, there was a total of 39 regional airports in inner regional Australia, 52 regional airports in outer regional Australia, 43 regional airports in remote Australia and 144 regional airports in very remote Australia. By 2005, there were a net total of 26 regional airports in inner regional Australia, 34 regional airports in outer regional Australia, 21 regional airports in remote Australia and 89 regional airports in very remote Australia. Over the 22 years, inner regional Australia experienced the least decline in the number of regional airports served by airlines, followed by outer regional Australia, remote Australia and very remote Australia.

Figure 2.6 shows that the number of large regional airports served has been relatively stable over the past 22 years. There were 22 large regional airports served in 1984 and that number fell to 20 by the end of 2005. The number of medium and small regional airports both exhibit gradual declining trends. There were 43 medium regional airports and 78 small regional airports in 1984 compared to 31 medium regional airports and 37 small regional airports in 2005. Rural airports experienced a steeper decline in numbers than the other airport sizes but appear to have experienced a surge after 2002.

Figure 2.6 Number of regional airports served, by airport size, 1984 to 2005

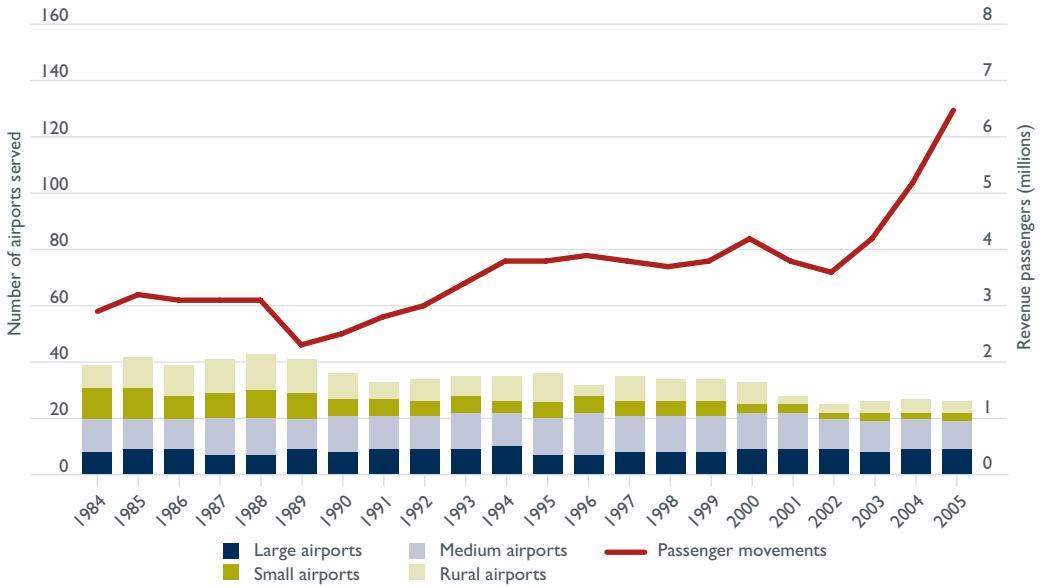


Source: BITRE time series estimates.

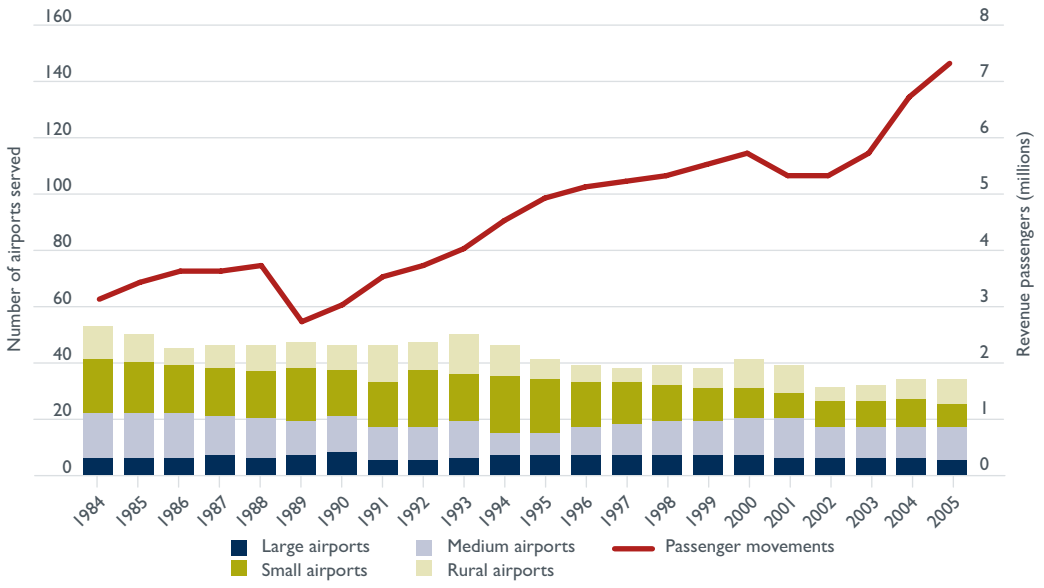
Despite the slow decline in the number of regional airports, the growth of passenger movements has been strong in inner and outer regional Australia (Figure 2.7). Much of the decline in the number of regional airports was due to the shrinkage in the number of rural airports. This scenario is particularly true for very remote Australia where the number of rural airports has been consistently higher than other parts of regional Australia (Figure 2.7d).

Figure 2.7 Passenger movements at regional airports and regional airports by airport size, by ASGC Remoteness Classification, 1984 to 2005

(a) Inner regional Australia

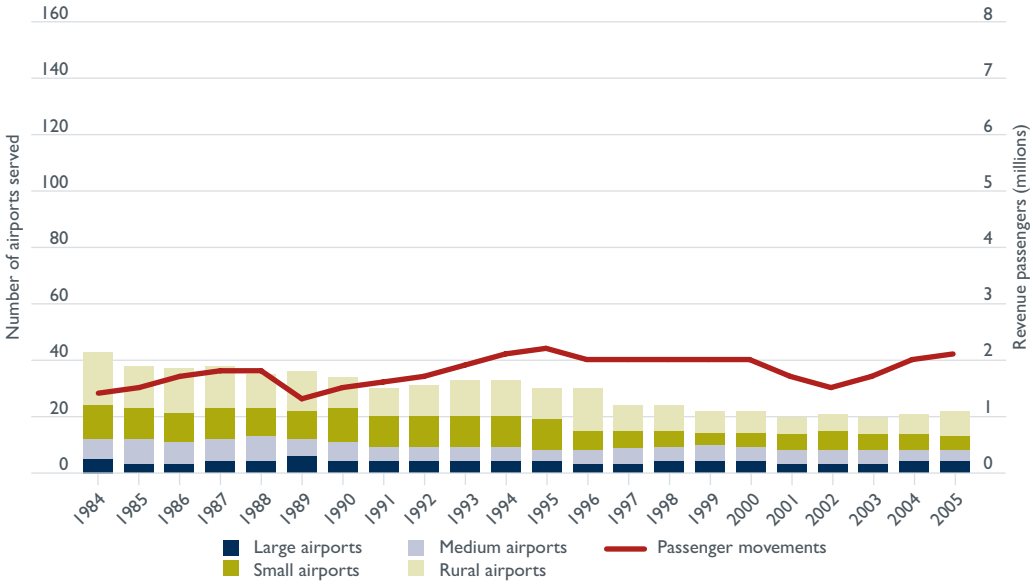


(b) Outer regional Australia

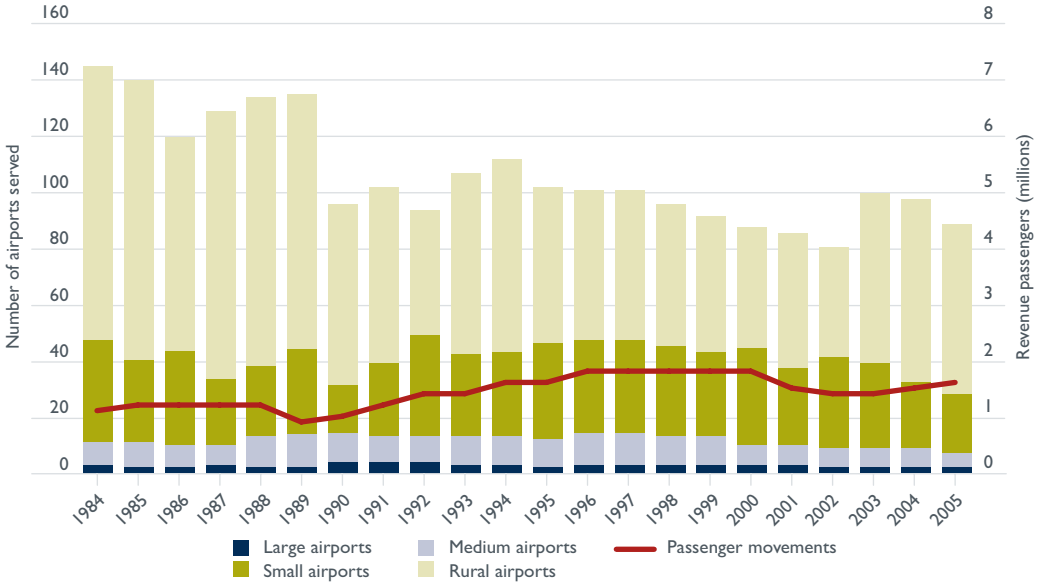


Source: BITRE time series estimates.

(c) Remote Australia



(d) Very remote Australia



Source: BITRE time series estimates.

Increases in passenger numbers at regional airports combined with declines in airport numbers over the years has resulted in a pronounced upward trend in average passenger movements per regional airport served per year.

In 1984, the ratio of passenger movements to regional airports was 75 000 per airport at inner regional airports and 57 800 per airport at outer regional airports. In 2005, each regional airport processed an average of 242 000 passengers in inner regional Australia and close to an average of 216 000 passengers per airport in outer regional Australia. These high ratios indicate high concentrations in passenger movements at some regional airports in inner and outer regional Australia. The change in the ratio of passenger movements to number of regional airports served in very remote Australia has been modest compared to other regional areas (Table 2.1).

Table 2.1 Average passenger movements per regional airport, by ASGC Remoteness Classification, 1984 to 2005

	Average passenger movements per regional airport (thousands)			
Year	*Inner regional*	*Outer regional*	*Remote*	*Very remote*
1984	75.1	57.8	32.7	7.7
1985	75.0	68.2	40.5	8.3
1986	79.7	79.7	45.3	10.0
1987	76.0	79.0	46.8	9.2
1988	71.6	78.9	51.1	9.2
1989	56.1	58.0	35.9	6.9
1990	68.3	65.0	43.3	10.4
1991	85.1	75.6	53.3	11.6
1992	88.2	77.7	53.7	15.0
1993	94.8	79.9	56.8	13.5
1994	102.0	98.0	64.2	14.1
1995	103.4	119.2	71.7	16.0
1996	120.5	131.7	67.8	17.4
1997	107.9	133.0	84.5	18.0
1998	109.9	135.7	85.4	18.8
1999	112.7	136.6	92.5	19.5
2000	126.3	139.0	90.0	20.3
2001	134.2	135.3	79.4	17.9
2002	138.9	166.3	72.5	17.5
2003	159.9	179.5	84.9	14.4
2004	194.4	197.4	93.5	15.2
2005	242.0	215.9	96.0	17.7

Source: BITRE time series estimates.

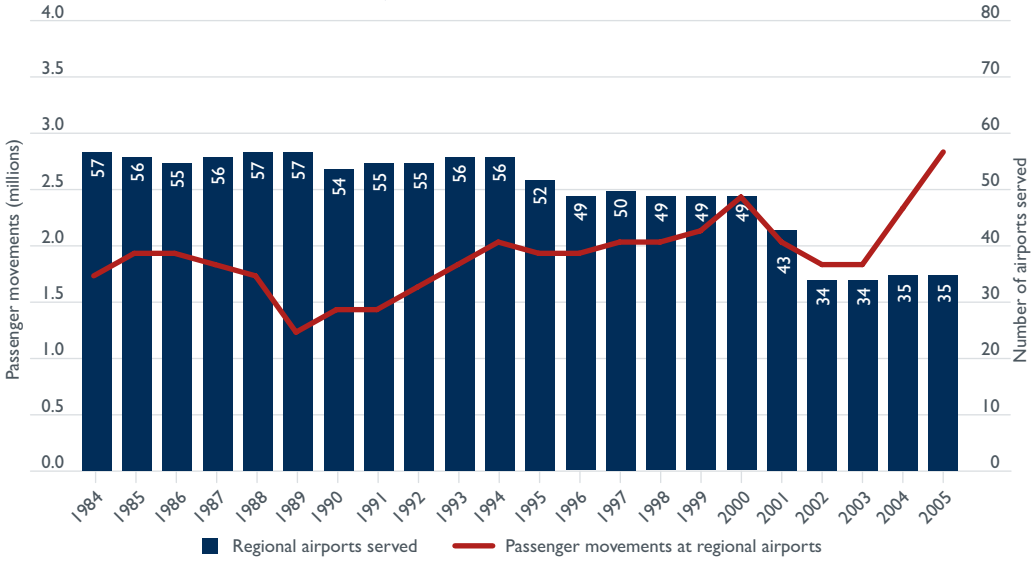
2.1.2 State level

New South Wales

Overall, the number of passenger movements at regional airports in New South Wales increased from 1.7 million in 1984 to 2.8 million in 2005 (Figure 2.8). The annual average growth rate was 0.7 per cent over the period 1984 to 1988. It increased to 7.6 per cent for 1991 to 1995, slowed down to 4.6 per cent for 1995 to 2000 and 3.3 per cent for 2000 to 2005 (Figure 2.22). The entry into the Australian market of Virgin Blue in 2000, Regional Express (REX, a merger of former Ansett subsidiaries of Kendell and Hazelton Airlines) in 2002 and Jetstar (Qantas' new low-cost subsidiary) in 2003 have added more air services at regional airports in New South Wales. Additional services from these airlines contributed greatly to the overall growth in passenger travel over the past few years.

Figure 2.8 shows that there used to be more regional airports served by airlines in New South Wales between the mid-1980s and mid-1990s. The number of regional airports served by airlines was reasonably stable during the late 1990s, but has since experienced a further decline. In 2000, air services ceased to several regional airports (Coonabarabran, Gunnedah, Scone and Singleton) as a result of the suspension of Yanda Airlines following a safety incident. The airline subsequently ceased operation. Nine regional airports, which recorded activity in 2001, ceased to show any activity

Figure 2.8 Passenger movements and number of regional airports served in New South Wales, 1984 to 2005



Source: BITRE time series estimates.

in 2002. Most of these airports were located in inner and outer regional Australia. Of the nine regional airports, air services from West Wyalong, Cootamundra, Cowra, Young and Forbes were discontinued upon the cessation of operations by Country Connection Airlines in 2001. Hazelton Airlines, which had been the only airline serving Casino since 1992, ceased its operation in 2001. Kempsey was served by Impulse Airlines (which merged with Qantas in 2001) between 1992 and 2001. This

regional airport attracted a new air service in 2003 from Horizon Airlines but only managed to sustain services for a year. Air Link, the only airline serving Nyngan and Brewarrina from 1991 ceased its services to those regional airports after 2001.

Table 2.2 shows 35 regional airports in New South Wales with recorded airport activities in 2005. A few of these airports have continued to experience reductions in air services in the past few years, including Mudgee, Coonamble, Walgett, Bourke and Lightning Ridge. Each of these airports serve less than 2000 passengers a year. Cooma, Grafton and Inverell (serving between 5000 and 10 000 passengers a year) had also experienced declines in air services over many years before showing signs of gradual recovery in 2005.

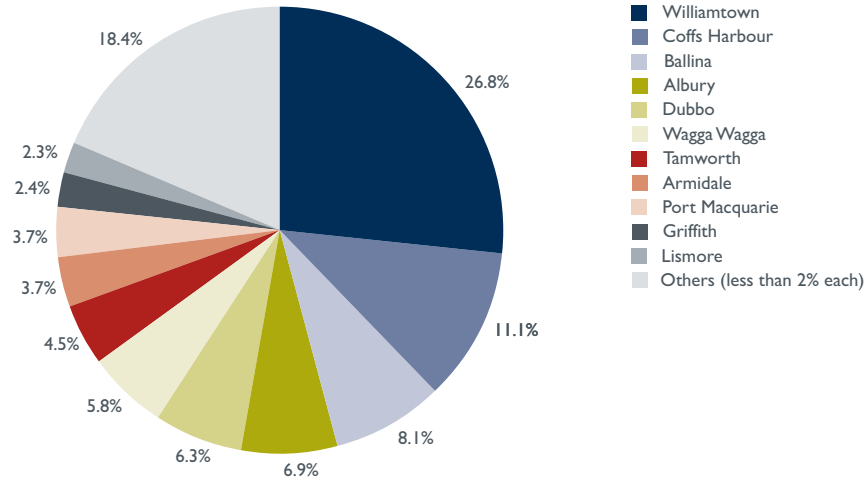
Table 2.2 Regional airports in New South Wales, 2005

Inner regional Australia		*Outer regional Australia*		*Remote Australia*		*Very remote Australia*	
Albury	L	Dubbo	M	Coonamble	R	Lord Howe Island	S
Ballina	L	Griffith	M	Lightning Ridge	R	Norfolk Island	S
Coffs Harbour	L	Merimbula	M	Walgett	R	Bourke	R
Williamtown	L	Narrandera	M			Cobar	R
Armidale	M	Broken Hill	S				
Lismore	M	Gunnedah	S				
Moruya	M	Moree	S				
Orange	M	Narrabri	S				
Port Macquarie	M	Parkes	S				
Tamworth	M	Coonabarabran	R				
Wagga Wagga	M	Grafton	R				
Cooma	S	Inverell	R				
Bathurst	S	Mudgee	R				
Taree	S	West Wyalong	R				

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

The top three regional airports in New South Wales by the percentage of passenger movements in 2005 were Williamtown, Coffs Harbour and Ballina respectively (Figure 2.9).

Figure 2.9 Regional airports in New South Wales, by percentage of passenger movements, 2005

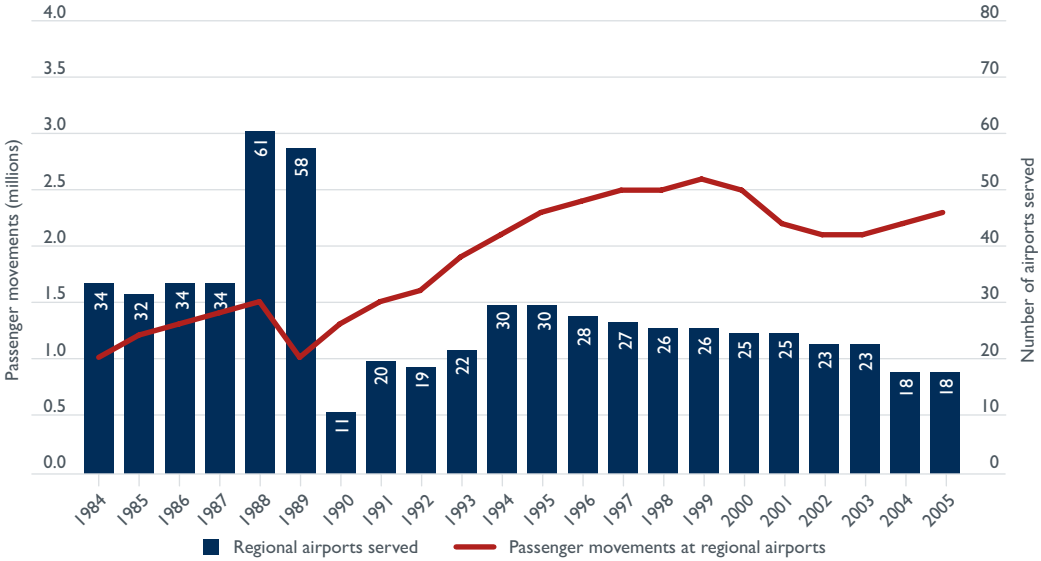


Source: BITRE time series estimates.

Northern Territory

Overall, the number of passenger movements at regional airports in the Northern Territory increased from 1 million in 1984 to 2.3 million in 2005 (Figure 2.10). The average annual growth rate in passenger movements was much higher for the Northern Territory than for most other states in the period from 1984 to 1988 and 1991 to 1995, at an average rate of 10.5 per cent and 11.5 per cent per annum respectively (Figure 2.22). However, the growth rate fell to 2.1 per cent per annum over the period 1995 to

Figure 2.10 Passenger movements and number of regional airports served in the Northern Territory, 1984 to 2005



Source: BITRE time series estimates.

2000 and to a negative rate of 1.8 per cent over the period of 2000 to 2005. The negative growth was partly due to a declining trend in passenger movements at larger regional airports in Alice Springs, Ayers Rock and Gove between 1995 and 2002. These regional airports started to take a slow turn to an upward shift after 2002. Many other small regional airports also contributed to the declining trend in passenger movements and most of them continued to experience declines in the past few years.

The irregular fluctuations in the number of airports served in the 1980s could be a result of incomplete and inconsistent data collection for the Northern Territory over the period. The time series started to stabilise when the number of regional airports served by airlines was hovering around 30 airports in the mid-1990s. Since then, the trend has continued a gradual decline. There were only 18 regional airports in 2004 and 2005 (Figure 2.10). Air North was the sole air service provider to regional airports such as Borroloola, Roper River, Garden Point, Jabiru and Croker Island until 2003.

Table 2.3 shows the 18 regional airports in the Northern Territory with recorded airport activities in 2005. A few of these airports have continued to experience reductions in air services in the past few years. These airports include Katherine-Tindal, Lake Evella, Numbulwar, Hooker Creek and Yuendumu. All these airports serve less than 5000 passengers a year.

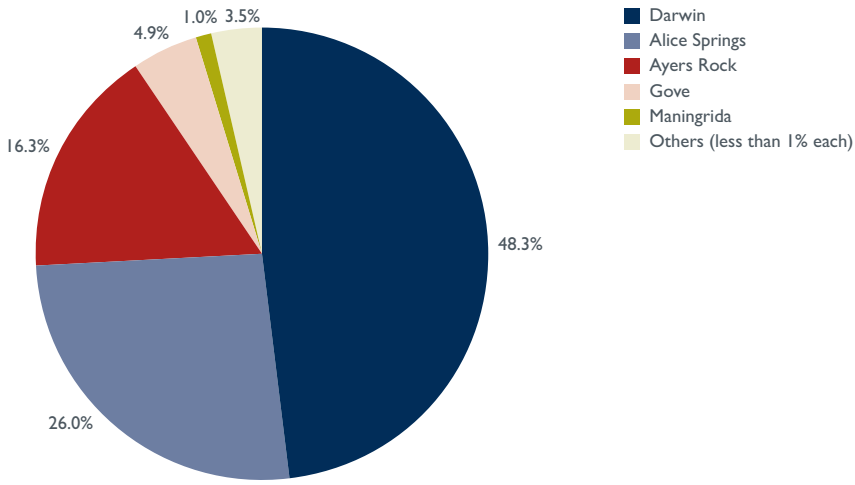
Table 2.3 Regional airports in the Northern Territory, 2005

Outer regional Australia		*Remote Australia*		*Very remote Australia*	
Darwin	L	Alice Springs	L	Ayers Rock	M
		Katherine-Tindal	R	Elcho Island	S
				Groote Eylandt	S
				Maningrida	S
				McArthur River	S
				Milingimbi	S
				Gove	R
				Hooker Creek	R
				Kalkgurung	R
				Lake Evella	R
				Numbulwar	R
				Ramingining	R
				Tennant Creek	R
				Victoria River Downs	R
				Yuendumu	R

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

The top three regional airports in the Northern Territory by the percentage of passenger movements in 2005 were Darwin, which constituted close to 50 per cent of the total share, followed by Maningrida and Ayers Rock (Figure 2.11). In terms of its remoteness and accessibility to other population centres, Darwin has been classified to be in outer regional Australia according to the ASGC Remoteness Area Classification. Both Maningrida and Ayers Rock were in very remote Australia.

Figure 2.11 Regional airports in the Northern Territory, by percentage of passenger movements, 2005

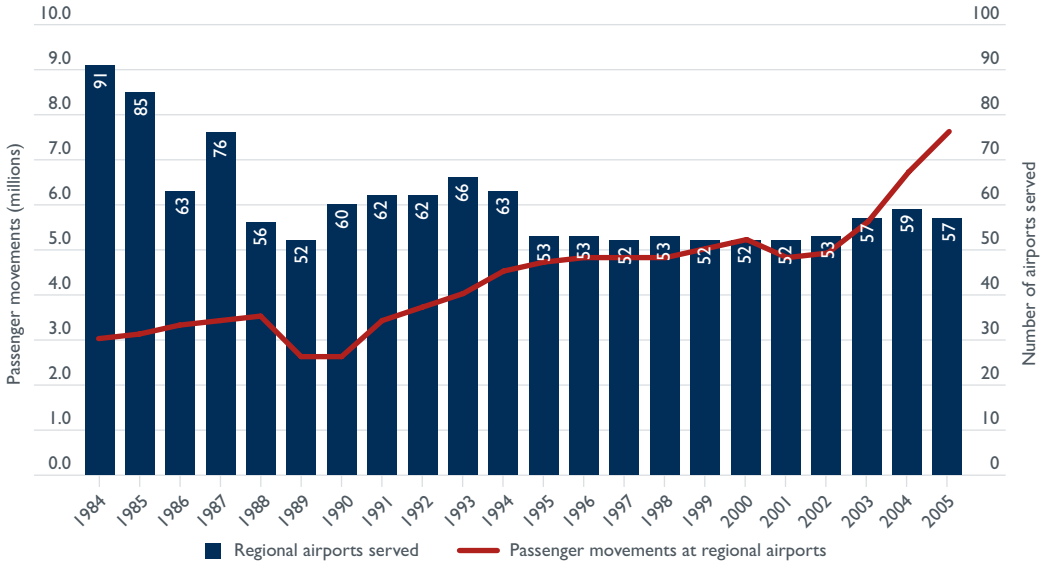


Source: BITRE time series estimates.

Queensland

Overall, the number of passenger movements at regional airports in Queensland increased from 3 million in 1984 to 7.6 million in 2005 (Figure 2.12). The average annual growth rate was 3.7 per cent over the period from 1984 to 1988 and increased to 8.6 per cent between 1991 and 1995 (Figure 2.22). As in other states and territories, the growth in the period 1995 to 2000 was at a more modest average rate of 1.8 per cent per annum. However, over the period from 2000 to 2005, there was a significant rate of growth to 8.1 per cent per annum.

Figure 2.12 Passenger movements and number of regional airports served in Queensland, 1984 to 2005



Source: BITRE time series estimates.

The number of airports served by airlines in Queensland displays a decreasing trend between 1984 to 1989, from 91 airports in 1984 to 52 airports in 1989 (Figure 2.12). The trend took an upward shift after deregulation in the period 1991 to 1995, with 60 to 66 regional airports being served by airlines each year. The number of airports served declined to only 53 airports in 1995. The reason for the decline was partly due to the closure of Air Cairns. The number of regional airports served has since stayed slightly above 50 for the past few years. In 2001, Flight West Airlines, which had served 28 regional airports in Queensland, went into voluntary liquidation. Both MacAir and Qantas were placed under temporary replacement contracts for a year with Queensland Transport for the eight regulated routes formerly operated by Flight West Airlines. Following a public tender process in May 2002, both airlines again successfully secured the air service contracts, committing the government to $6.9 million in funding each year to ensure continuity of these services for the next five years.

Table 2.4 shows 57 regional airports in Queensland with recorded airport activities in 2005. A few of these airports have continued to experience reductions in air services in recent years. These airports include Dunk Island and Normanton (serving slightly in excess of 10 000 passengers a year), Lizard Island (serving less than 10 000 passengers a year), and Hughenden, Richmond, Karumba, Julia Creek and Coen (serving less than 2000 passengers a year).

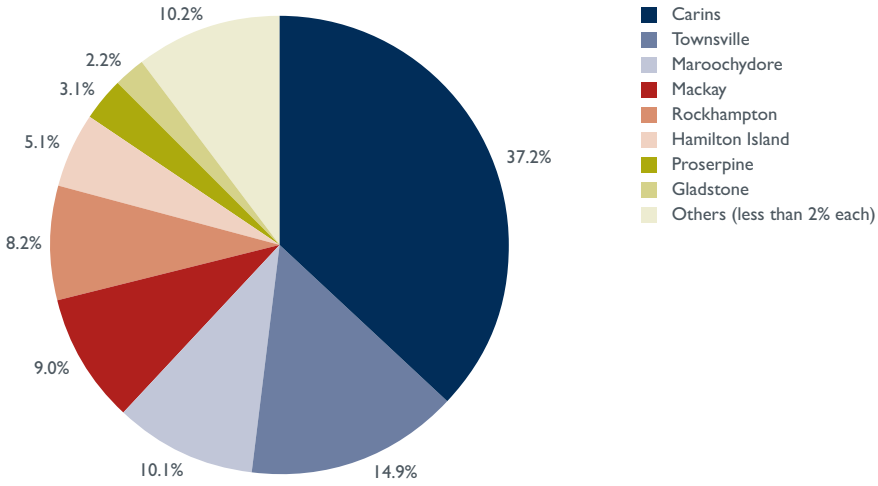
Table 2.4 Regional airports in Queensland, 2005

Inner regional Australia		*Outer regional Australia*		*Remote Australia*		*Very remote Australia*			
Maroochydore	L	Cairns	L	Hamilton Island	L	Thursday Island	M	Edward River	R
Rockhampton	L	Mackay	L	Proserpine	L	Charleville	S	Glengyle	R
Bundaberg	M	Townsville	L	Mount Isa	M	Cloncurry	S	Hughenden	R
Gladstone	M	Emerald	M	Dunk Island	S	Cooktown	S	Iron Range	R
Hervey Bay	M	Blackwater	S	Palm Island	S	Doomadgee	S	Julia Creek	R
Maryborough	S	Roma	S	Great Keppel Island	R	Longreach	S	Karumba	R
Oakey	R	Thangool	R	Moranbah	R	Aurukun	R	Kowanyama	R
						Ballera	R	Lizard Island	R
						Barcaldine	R	Quilpie	R
						Bedourie	R	Richmond	R
						Birdsville	R	Roseberth	R
						Blackall	R	Thargomindah	R
						Boulia	R	Windorah	R
						Burketown	R	Winton	R
						Coen	R	Yorke Island	R
						Cunnamulla	R	Mornington Island	R
						Durham Downs	R	Normanton	R
						Durrie	R	Weipa	R

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

The top three regional airports in Queensland by the percentage of passenger movements in 2005 were Cairns (37 per cent of the total share) followed by Townsville and Maroochydore (Figure 2.13). All of the regional airports listed in Figure 2.11 have experienced an increase in passenger movements for the past five years.

Figure 2.13 Regional airports in Queensland, by percentage of passenger movements, 2005

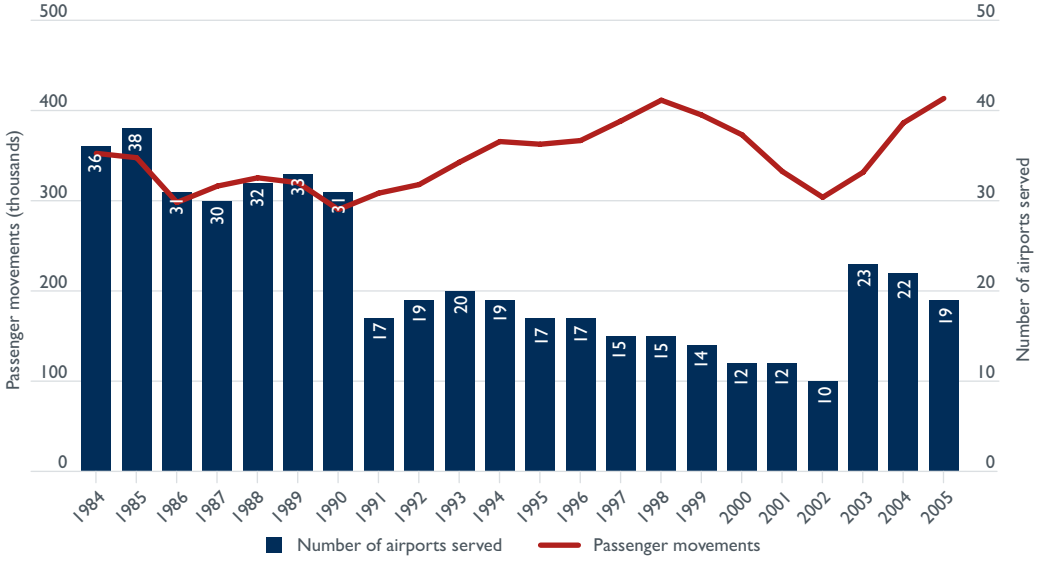


Source: BITRE time series estimates.

South Australia

Overall, the number of passenger movements at regional airports in South Australia fluctuated at around 300 000–400 000 over the 22 years (Figure 2.14). The average annual growth rate was minus 2 per cent per annum over the period 1984 to 1988, grew to 4.1 per cent over the period 1991 to 1995, fell below 1 per cent over the period 1995 to 2000 and was around 2 per cent per annum over the period 2000 to 2005 (Figure 2.22). Port Lincoln, Mt Gambier, Whyalla and to a lesser extent, Ceduna have been responsible for most of the growth in recent years.

Figure 2.14 Passenger movements and number of regional airports served in South Australia, 1984 to 2005



Source: BITRE time series estimates.

While there were 36 regional airports with regular scheduled services in South Australia in 1984, that number fell to 19 in 2005. The withdrawal of air services by Augusta Airways resulted in a reduction of services at 11 regional airports. The number of regional airports continued its downward trend through the 1990s. The sudden rise from 2003 onwards was partly due to additional information collected from regional airports serving mining centres. Such information was unavailable before 2003. The newly-added data created a time series break for the data collection.

Table 2.5 shows the 19 regional airports in South Australia with recorded airport activities in 2005. A few of these airports have continued to experience reductions in air services in the past few years. These airports include Kingscote on Kangaroo Island (serving more than 60 000 passengers a year), Port Augusta (serving less than 5000 passengers a year) and Leigh Creek (serving below one hundred passengers a year).

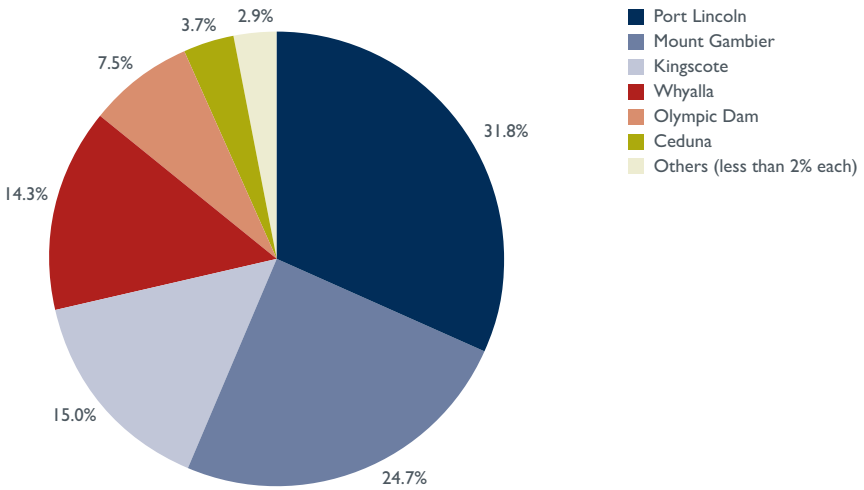
Table 2.5 Regional airports in South Australia, 2005

Outer regional Australia		*Remote Australia*		*Very remote Australia*			
Mount Gambier	M	Kingscote	M	Ceduna	R	Etadunna	R
Whyalla	M	Port Lincoln	M	Clifton Hills	R	Innamincka	R
Port Augusta	R	Olympic Dam	S	Coober Pedy	R	Leigh Creek	R
				Cordillo Downs	R	Moolawatana	R
				Cowarie	R	Mulka	R
				Dulkaninna	R	Mungaranie	R

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

The top three southern regional airports in South Australia by the percentage of passenger movements in 2005 were Port Lincoln (close to 38 per cent of the total share), followed by Mt Gambier and Kingscote (Figure 2.15).

Figure 2.15 Regional airports in South Australia, by percentage of passenger movements, 2005

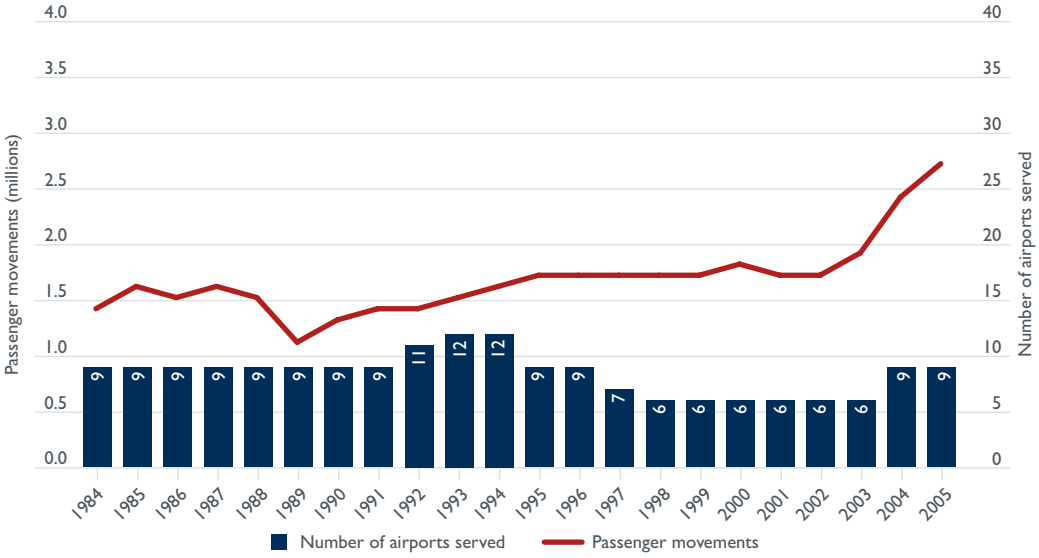


Source: BITRE time series estimates.

Tasmania

Overall, the number of passenger movements at regional airports in Tasmania was 1.4 million in 1984 and 2.7 million in 2005 (Figure 2.16). The average annual growth rate was 2.6 per cent over the period 1984 to 1988, 5.4 per cent over the period 1991 to 1995, only 0.4 over the period 1995 to 2000 and 9.4 per annum over the period 2000 to 2005 (Figure 2.22). Hobart and Launceston were responsible for most of the growth in recent years. Passenger movements at King Island and Flinders Island experienced dramatic declines between 1998 and 2003 but started to display a gradual upward trend after 2003. The change in trend on Flinders Island was due to the resumption of air services by Airlines of Tasmania in 2002. Airlines of Tasmania was in direct competition with Island Airlines Tasmania for a year. Island Airlines Tasmania ceased its services to Flinders Island after 2003. King Island has been served by Airlines of Tasmania and King Island Airlines since the 1990s. Passenger movements started to increase after Regional Express commenced services in 2002.

Figure 2.16 Passenger movements and number of regional airports served in Tasmania, 1984 to 2005



Source: BITRE time series estimates.

The number of regional airports served by airlines has varied slightly over time, with nine regional airports served in 1984 and the same number by the end of 2005. In the mid-1990s, Airlines of Tasmania stopped providing air services to and from Cambridge, Smithton, Strahan, Cape Barren Island and Queenstown. All of these regional airports generated less than 5000 passenger movements a year. It was not until 2004 when operations were again commenced by Airlines of Tasmania to Cambridge, Strahan and Cape Barren Island.

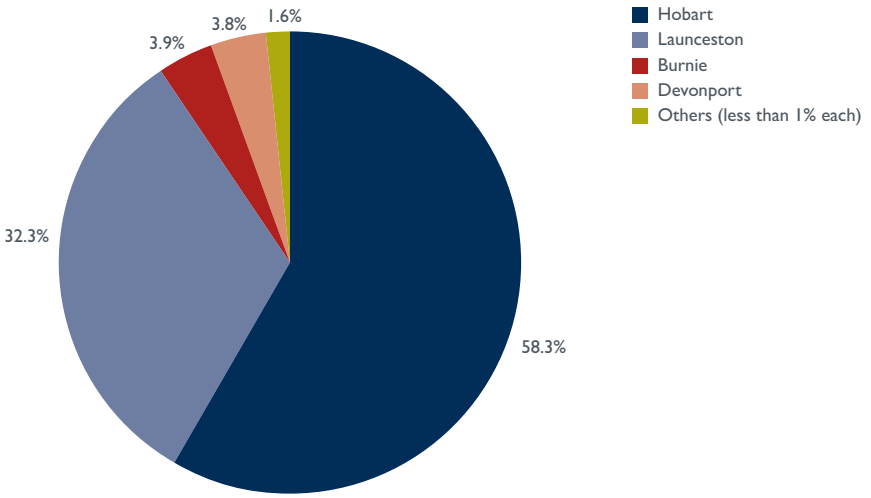
Table 2.6 shows the nine regional airports in Tasmania with recorded passenger movements in 2005. Figure 2.17 shows that Hobart generated close to 60 per cent of the passenger movements and Launceston generated 32 per cent. The remaining regional airports generated less than 10 per cent of the total passenger movements in Tasmania.

Table 2.6 Regional airports in Tasmania, 2005

Inner regional Australia		*Outer regional Australia*		*Remote Australia*		*Very remote Australia*	
Hobart	L	Burnie	M	Strahan	R	Flinders Island	S
Launceston	L	Devonport	M			King Island	S
Cambridge	R					Cape Barren Island	R

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

Figure 2.17 Regional airports in Tasmania, by percentage of passenger movements, 2005



Source: BITRE time series estimates.

Victoria

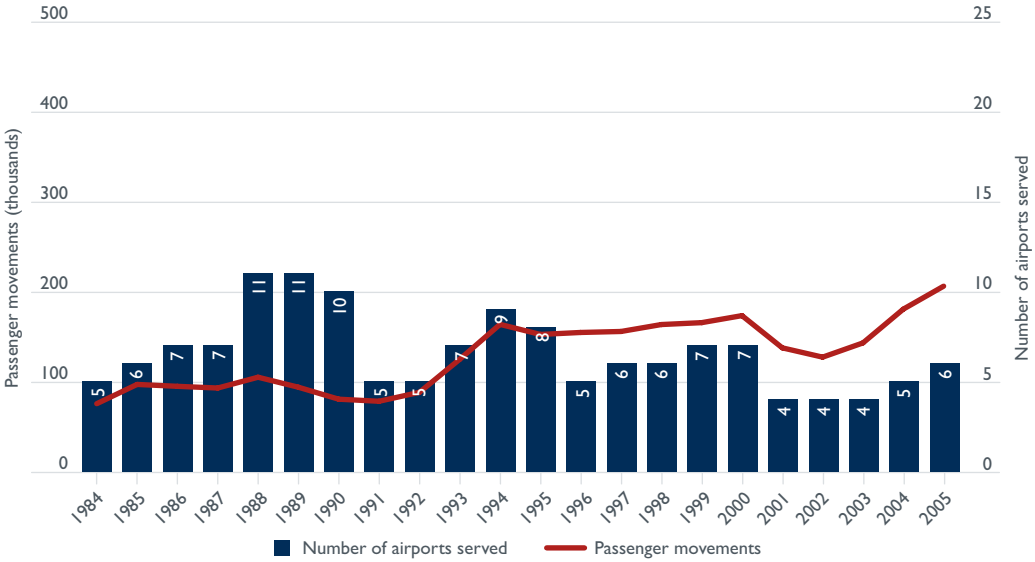
Overall, the number of passenger movements at regional airports in Victoria was 74 700 in 1984 and 205 000 in 2005 (Figure 2.18). The average annual growth rate was 8.6 per cent over the period 1984 to 1988, 18.3 per cent over the period 1991 to 1995, 2.6 per cent over the period 1995 to 2000, and 3.5 per cent per annum over the period 2000 to 2005 (Figure 2.22).

The number of regional airports served by airlines fluctuated between 4 to 11 airports, with an exception over the period 1988 to 1990 (Figure 2.18).

Table 2.7 shows the six regional airports in Victoria with recorded airport activities in 2005. Of the six regional airports, Latrobe Valley has experienced a decline in passenger movements since the mid-1990s, from around 20 000 passengers in 1995 to less than 500 passengers in 2005.

In terms of share, Mildura generated approximately 73 per cent of the total passenger movements in regional Victoria. Portland added another 17.6 per cent of passenger movements and Warrnambool contributed 4 per cent of passenger movements in Victoria (Figure 2.19).

Figure 2.18 Passenger movements and number of regional airports served in Victoria, 1984 to 2005



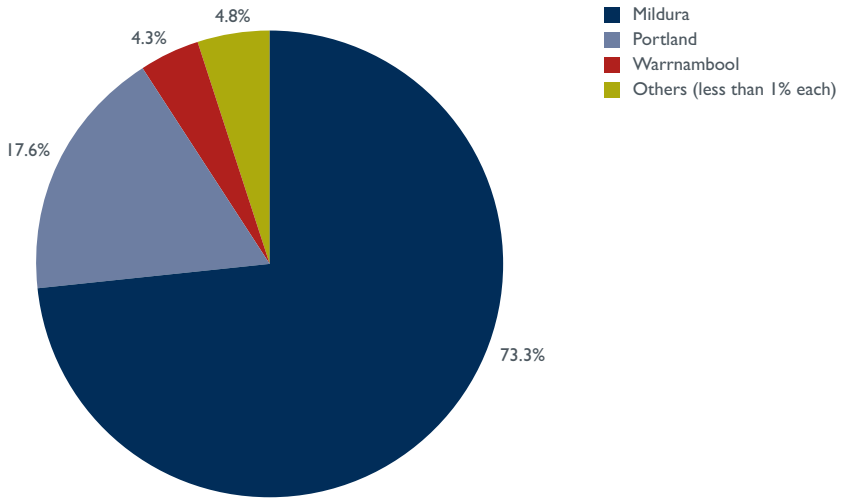
Source: BITRE time series estimates.

Table 2.7 Regional airports in Victoria, 2005

Inner regional Australia		*Outer regional Australia*	
Latrobe Valley	R	Mildura	M
Warrnambool	R	Hamilton	R
		Mount Hotham	R
		Portland	S

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

Figure 2.19 Regional airports in Victoria, by percentage of passenger movements, 2005



Source: BITRE time series estimates.

Western Australia

Overall, the number of passenger movements at regional airports in Western Australia was 1 million in 1984 and 1.4 million in 2005 (Figure 2.20). The average annual growth rate was 2.8 per cent over the period 1984 to 1988, 7.7 per cent over the period 1991 to 1995, –1.6 per cent over the period 1995 to 2000 and 2.8 per cent per annum over the period 2000 to 2005 (Figure 2.22). Most regional airports processing more than 10 000 passengers in Western Australia have experienced growth in the past few years. In particular, rapid passenger growth was observed in Broome, Karratha and Kalgoorlie.

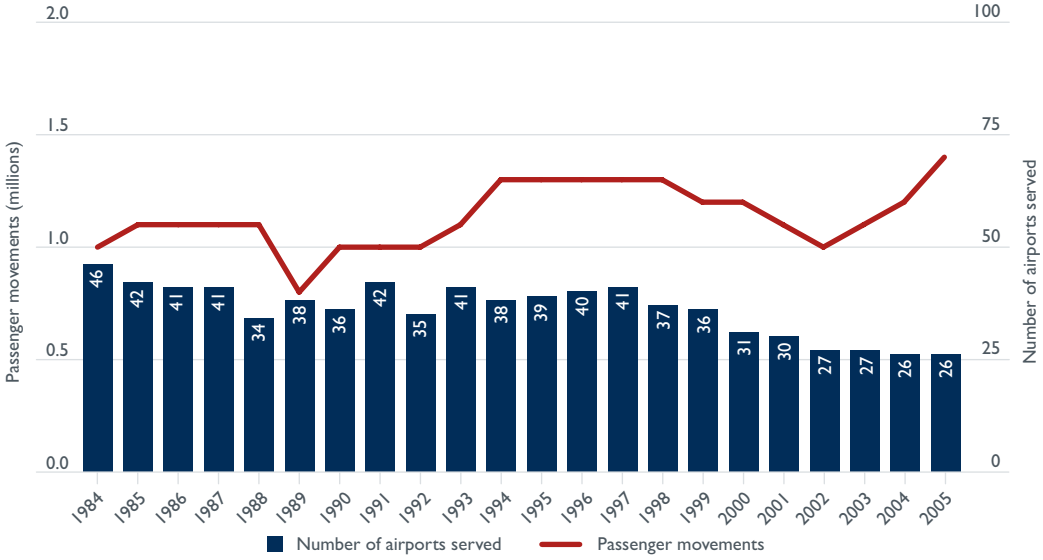
The number of regional airports served by airlines declined gradually from 46 airports in 1984 to 26 airports in 2005 (Figure 2.20). From a historical point of view, most regional airports which have lost their air services share two common characteristics. Firstly, these airports were only serviced by one airline. Secondly, the number of passenger movements at these airports was usually below 10 000 passengers a year. The decline in the number of regional airports recorded in Western Australia could also be affected by the change of Regular Public Transport (RPT) services to charter services at some regional airports. For instance, there was no activity recorded at Argyle Diamonds in 2004 and 2005. In reality, Skywest Airlines has been providing charter air services to and from Argyle since 2002. With a three year charter contract with Rio Tinto, Skywest has added additional services to Argyle on a twice weekly basis and changed the nature of air services from RPT to charter. According to the Review of Air Services in Western Australia by the Centre for Asia Pacific Aviation (2002), charter flights accounted for 220 600 Western Australian passenger movements in 2001.

Table 2.8 lists the 26 regional airports in Western Australia with recorded passenger movements in 2005. A few of these airports have continued to experience reductions in air services, particularly over the period 2001 to 2005. These airports include Carnarvon (serving close to 20 000 passengers in 2005), Leinster and Leonora (serving

5000–6000 passengers in 2005), and all regional airports that had less than 2000 passengers (such as Kalbarri, Laverton, Derby-Curtin and Halls Creek).

The top three regional airports in Western Australia by the percentage of passenger movements in 2005 were Broome, Karratha and Kalgoorlie respectively (Figure 2.21).

Figure 2.20 Passenger movements and number of regional airports served in Western Australia, 1984 to 2005



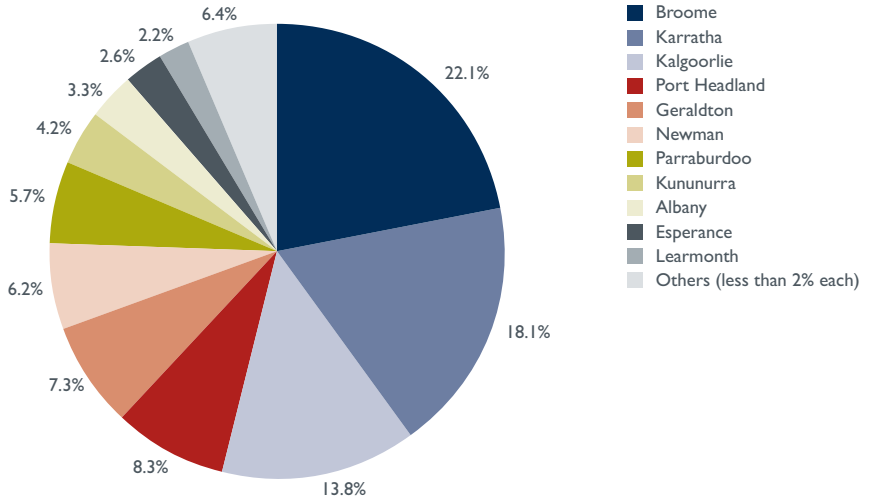
Source: BITRE time series estimates.

Table 2.8 Regional airports in Western Australia, 2005

Outer regional Australia		*Remote Australia*		*Very remote Australia*			
Kalgoorlie	L	Broome	L	Karratha	L	Halls Creek	R
Albany	M	Port Hedland	M	Kununurra	M	Laverton	R
Geraldton	M	Carnarvon	S	Newman	M	Leinster	R
		Esperance	S	Paraburdoo	M	Leonora	R
		Kalbarri	R	Christmas Island	S	Meekatharra	R
				Cocos Island	S	Monkey Mia	R
				Learmonth	S	Mount Magnet	R
				Derby-Curtin	R	Ravensthorpe	R
				Fitzroy Crossing	R	Wiluna	R

Note: L = Large airports, M = Medium airports, S= Small airports, R = Rural airports.
Source: BITRE time series estimates.

Figure 2.21 Regional airports in Western Australia, by percentage of passenger movements, 2005

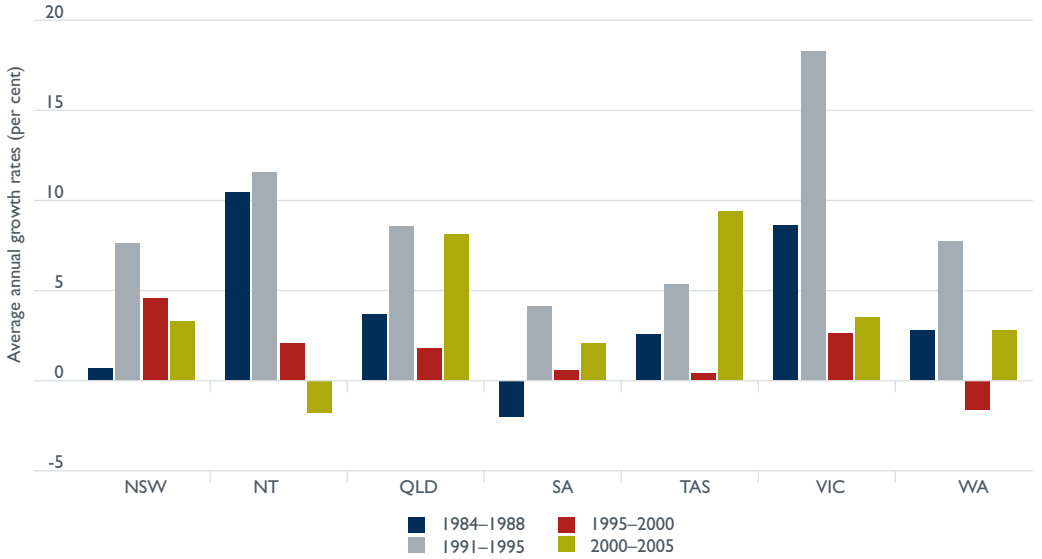


Source: BITRE time series estimates.

Summary

Figure 2.22 summarises the changes in average annual growth rates of passenger movements at regional airports by state and territory over the four interval periods. The growth patterns varied between states and territories over time. Generally, the growth rates in passenger movements for all states and territories were relatively high between 1991 and 1995 and slowed down significantly between 1995 and 2000. New

Figure 2.22 Average annual growth rates of passenger movements at regional airports, by state and territory, 1984 to 2005



Source: BITRE time series estimates, 1989 and 1990 omitted.

South Wales and the Northern Territory continued to experience declines in growth rates between 2000 and 2005. In particular, the Northern Territory experienced an average negative growth rate per annum during that period. On the other hand, both Queensland and Tasmania experienced relatively higher growth rates in passenger movements in recent years. Relative to the period between 1995 and 2000, Western Australia and South Australia have also experienced slight increments in growth rates between 2000 and 2005.

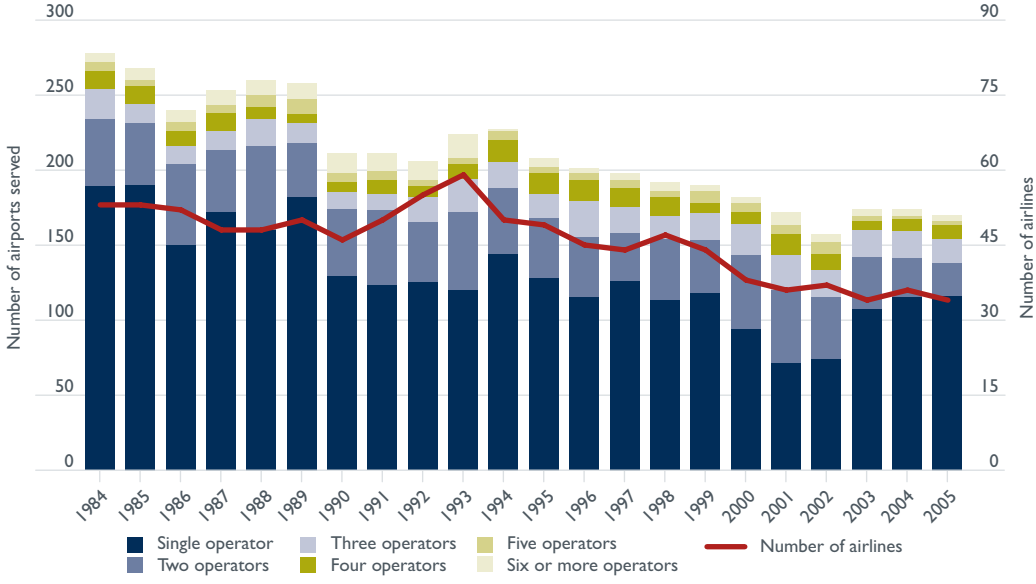
2.2 Airlines serving regional airports

2.2.1 National level

Figure 2.23 shows that the number of airlines serving regional airports fell from 53 (serving 278 airports) in 1984 to 34 (serving 170 airports) in 2005. Of the 34 airlines serving regional airports in 2005, only five airlines have continued to operate since 1984 (or earlier) and eight airlines have continued to provide services since 1991.

The historical data also shows that regional airports in Australia have been predominantly served by single operators. Of all regional airports served by airlines, the proportion served by a single operator has mostly been greater than 50 per cent in the past two decades. There was a small increase in the number of airports served by more than one operator in the beginning of the 1990s as a result of market adjustment after deregulation. However, the regional aviation market reverted to its steady state after the mid 1990s. The proportion of regional airports served by a single operator increased to more than 60 per cent. For a short period between 2001 and 2002, the proportion of regional airports served by a single operator dropped below 50 per cent for the first time in 18 years. It was again a result of market reshuffling and adjustment after the collapse of Ansett. The proportion of regional airports served by single operators has increased gradually after 2002, reaching 68 per cent in 2005.

Figure 2.23 Number of airlines serving regional airports, 1984 to 2005



Source: BITRE time series estimates.

See Appendix A, Table A1, for detailed statistics on airlines serving regional airports, by state and territory, over the past 22 years.

See Appendix A, Table A2, for detailed statistics on regional airports served, by airline, over the past 22 years.

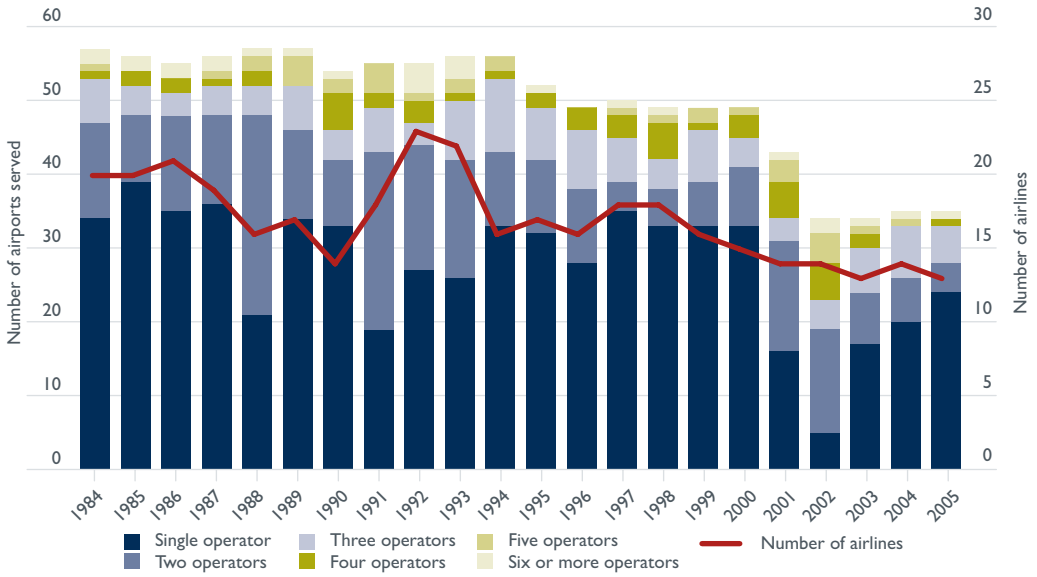
2.2.2 State level

New South Wales

The general trend in the number of airlines serving New South Wales' regional airports closely resembles the national trend (Figure 2.24). While there were 21 airlines serving 57 regional airports in 1984, only 13 airlines served 35 regional airports in 2005. Only one airline (Eastern Australia Airlines) from 2005 has been providing services to the state since 1984 (or earlier) and two airlines (Air Link and Sunstate Airlines) have been providing services to the state since 1991 (Table 2.9).

In 2005, Regional Express and Eastern Australia Airlines were the two major airlines serving regional airports in New South Wales. Regional Express served 16 regional airports and Eastern Australian served 12 regional airports.

Figure 2.24 Number of airlines serving regional airports in New South Wales, 1984 to 2005



Source: BITRE time series estimates.

Table 2.9 Airlines serving regional airports in New South Wales, 1984 to 2005

No. of airports served

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Regional Express																			16	15	15	16
Eastern Australia Airlines	22	21	20	18	22	16	17	17	15	15	13	12	12	11	11	11	13	14	16	16	13	12
Air Link Pty Ltd								8	8	8	9	9	8	8	8	9	9	9	7	7	7	7
Big Sky Express																					6	5
Sunshine Express																				3	4	4
Virgin Blue																			1	2	3	3
Sunstate Airlines						2			1	1	1	1	1	2	3	3	4	4	3	4	3	2
Brindabella Airlines																				3	2	2
Qantas Airways												1				1	1	1	1	1	1	2
Jetstar																					1	2
Norfolk Jet Express Pty Ltd														1	1	1	1	1	1	1	1	1
Aeropelican Air Services						4													1		1	1
Alliance Airlines																			1	1		1
MacAir																			2	7	5	
Redpath Regional																				2	2	
Horizon Airlines															1	2	2		3	5		
Impulse Qantaslink																		20	19			
Hazelton Airlines Pty Ltd	8	8	10	10	23	26	29	31	16	18	17	17	16	16	16	16	16	19	17			
Kendell Airlines	4	4	5	5	5	5	5	5	6	5	5	5	8	7	6	7	6	6	4			
Impulse Airlines	4	5	3	4	4	6	7	12	12	13	10	11	11	8	9	9	10	10				
Country Connection Airlines								3	3	6	7	6	5	5	5	5	5	5				
Ansett Airlines Of Australia	2	2	2	2	3	2		2	5	6	7	6	4	3	2	2	2	1				
Eastland Air														3	3	1	1	1				
Air Facilities									1	1	2	2	2	2	2	1	1	1				
Flight West Airlines												1	1	1	1	1	1	1				
Singleton-Yanda Airlines	3	3	3	3	3	4	3	6	6	8	8	5	5	5	5	5	5					
Tasman Australia Airlines															5	5						
Kentialink Australia														4	4							
Tamair									2	1	3	3	4	3	3							
Southern Australia Airlines Pty Ltd			1	1	1	1	1	1	1	1	1	1	1	1	1							
Pacific Interline													2	2								
Australian Air Charterers Pty Ltd											1	2	1	1								
Corporate Airlines										1	1	1	1									
Peninsula Air Services										2	5	2										
Link Airways								1	1	4	2											
Monarch Air									8	8												
Air New South Wales	17	18	18	19	21	15	10	11	10	7												
Western Nsw Airlines Pty Ltd	3	3	3	3	3	3	3	4	4	4												
Southern Pacific Regional Airlines								1	4	3												
East West Airlines	11	11	12	12	14	7	6	4	3	3												
Aquatic Air	2	2	1	1	2	1	1	1	1	1												
Air Midwest									1	1												
Coast To Coast Airlines									2													
Australian Airlines	1	1		1				1	1													
Australian Airlink									1													
Macknight Airlines	4	2	2	2	2	3	4	2														
Southern Airlines								2														
Norfolk Island Airlines Pty Ltd	3	3	3	3	3	3	8															
Countryair Pty Ltd							4															
Queensland Pacific Airlines							2															
Crane Airlines	1	1	1	2	2	1																
Royal Australian Air Force						1																
Flinders Island Airlines				2	1																	
Airlines Of Western Australia		1	1	1	1																	
Suncity Airlines			2	2																		
Easter Airways	1	1	1	1																		
Airlines Of South Australia	1	1	1																			
Murray Valley Airlines	1	1	1																			
Rossair Pty Ltd	1	1	1																			
Lloyd Aviation Jet Charter Pty Ltd			1																			
State Air Pty Ltd	1	1																				
Avdev Airlines Of Australia	11																					

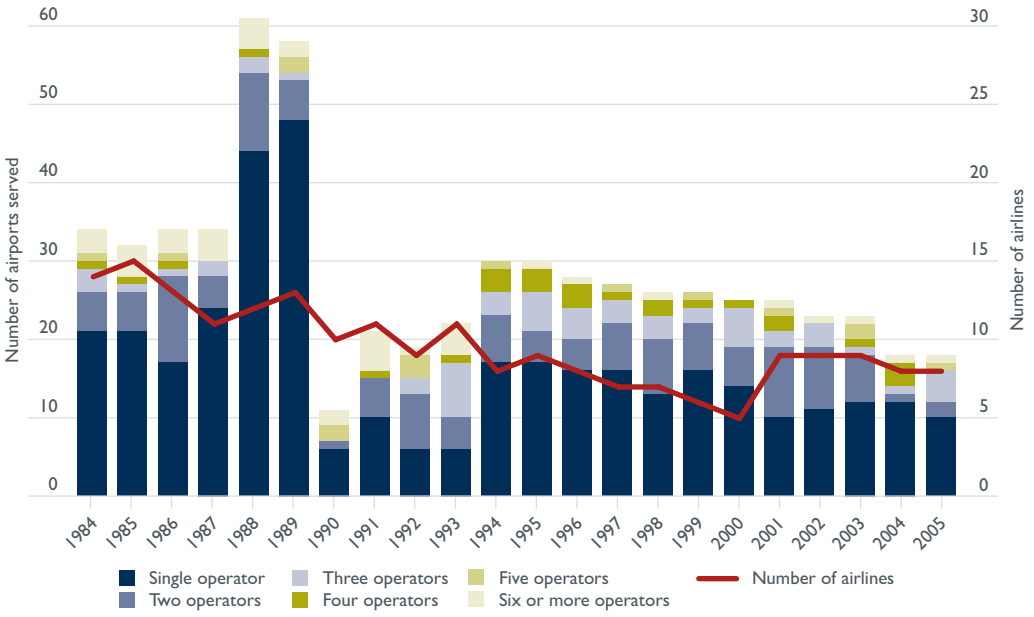
Source: BITRE time series estimates.

Northern Territory

The number of airlines serving regional airports in the Northern Territory exhibits a general downward trend between 1984 and 2000, an upward trend after 2000, and finally plateaued for the past three years (Figure 2.25). While there were 14 airlines serving 34 regional airports in 1984, there were 8 airlines serving 18 regional airports in 2005. Of the eight airlines serving regional airports in 2005, Mission Aviation Fellowship is the only longstanding airline to have offered services in the Territory since 1984 (or earlier). Both Air North and Qantas have been serving the Territory regional airports since 1993 (Table 2.10).

In 2005, Air North, Qantas and Aboriginal Air Services were the major airlines serving regional airports in the Northern Territory. Each of these airlines served eight regional airports in the Territory.

Figure 2.25 Number of airlines serving regional airports in the Northern Territory, 1984 to 2005



Source: BITRE time series estimates.

Table 2.10 Airlines serving regional airports in the Northern Territory, 1984 to 2005

No. of airports served

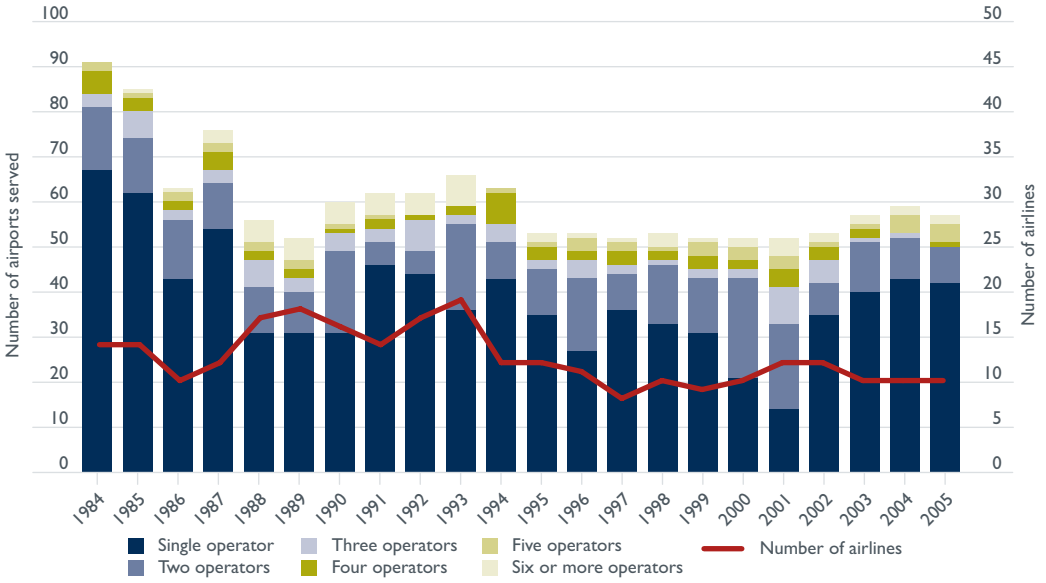
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Mission Aviation Fellowship	6	5	5	5	6	5	5	8	7	7	7	7	8	7	8	7	8	7	8	8	8	8
Air North Regional										15	22	22	20	19	23	23	21	22	11	10	7	8
Aboriginal Air Services																		5	6	6	6	8
Qantas Airways						1				4	5	5	5	5	4	4	6	5	4	5	5	5
Vincent Aviation																						4
National Jet Systems Pty Ltd												2	2	2	2	2	2	2	2	2	2	2
Virgin Blue																		1	1	2	2	2
Skywest Airlines Pty Ltd																			1	3	1	1
Anindilyakwa Air																		5	5	6	2	
Eastland Air																			4	4		
Ansett Airlines Of Australia	3	3	4	4	4	5	4	6	7	7	7	6	6	5	5	5	6	5				
Flight West Airlines								1										2				
Kakadu Air															2	2						
Arnhem Air Charter Pty Ltd	4	3							6	6	6	6	7	7	6							
Kendell Airlines				1	1	1	1	1	1	1	1	1	1	1								
Executive Air											4	6	5									
Air Mount Isa											3	3										
Air North International Pty Ltd	11	8	11	17	22	20		16	10	10												
Airlines Of Western Australia	3	3	3	3	3	3	5	5	5	6												
Australian Airlines	3	3	3	3	3	3	3	4	4	4												
Australian Airlink								4	4	4												
Skyport Airlines								4	4	4												
Airlines Of Northern Australia	7	7	7	7	7	7	7	7														
East West Airlines	2	2	2	2	2	2	2	2														
Ansett Leased						2	2															
Australian Leased						2	2															
Sunbird Airlines Pty Ltd							2															
Chartair	8	8	10		36	36																
Royal Australian Air Force						2																
Tillair	14	13	18	17	13																	
Air Queensland Ltd	1	1	1	2	1																	
Air New South Wales			1	1	1																	
Arrmunda Airways Pty Ltd	5	5	5																			
Opal Air Pty Ltd	1	1	1																			
Skymaster Aviation	2	2																				
Airlines Of South Australia		1																				

Source: BITRE time series estimates.

Queensland

Figure 2.26 shows that the number of airlines serving regional airports in Queensland exhibits a general downward trend over time. While there were 14 airlines serving 91 regional airports in 1984, there were only 10 airlines serving 57 regional airports in 2005. Out of the 10 airlines serving at regional airports in 2005, Sunstate Airlines is the only longstanding airline to have offered services in Queensland since 1984 (or earlier). Qantas has been serving the regional airports in the state since 1992 (Table 2.11).

Figure 2.26 Number of airlines serving regional airports in Queensland, 1984 to 2005



Source: BITRE time series estimates.

In 2005, MacAir and Sunstate Airlines were the two major airlines serving regional airports in Queensland. MacAir served 28 regional airports and Sunstate Airlines served 18 regional airports.

Table 2.11 Airlines serving regional airports in Queensland, 1984 to 2005

No. of airports served

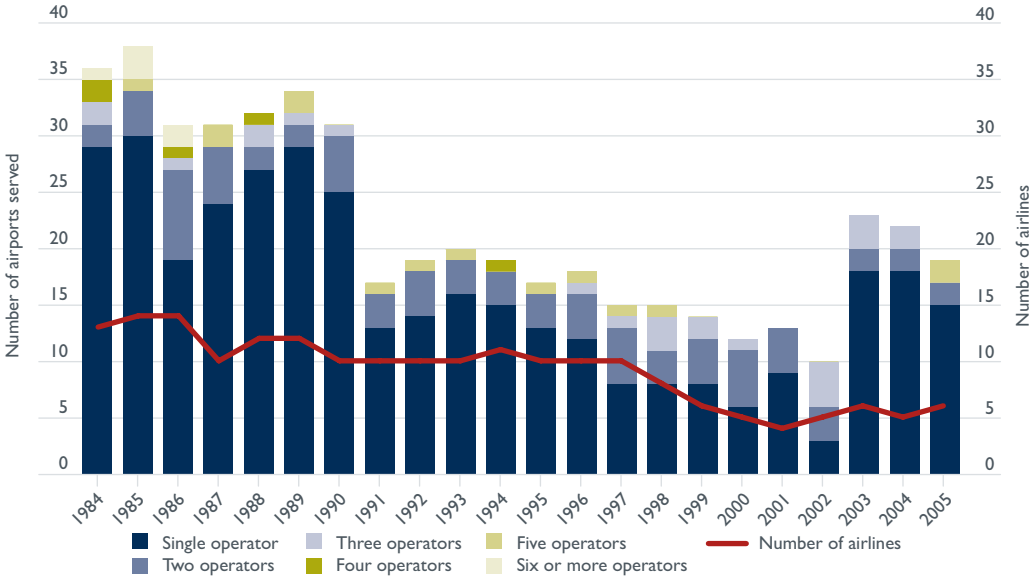
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
MacAir															3	3	17	35	31	30	28	28
Sunstate Airlines	9	9	9	15	16	15	14	13	14	21	20	18	19	17	17	13	14	20	19	18	17	18
Skytrans Airlines													4	7	8	8	8	8	8	8	8	9
Airlines Of South Australia																				8	10	8
Virgin Blue																		4	6	6	6	8
Jetstar																					6	8
Qantas Airways						2			1	6	6	7	7	7	8	8	8	9	10	9	8	7
Sunshine Express															1	1	1	4	4	4	4	4
Inland Pacific Air																			2	2	2	2
Alliance Airlines																			4	5	4	1
Air North Regional										1	1	1						1	1	1		
Impulse Qantaslink																		7	6			
Flight West Airlines								48	50	52	38	36	41	33	31	32	29	28	2			
Eastland Air								1	1	1	1	1	1	1	3	6	4	4	1			
Ansett Airlines Of Australia	12	7	8	9	9	8	7	8	9	8	9	9	9	9	8	9	9	10				
Kendell Airlines									1								1	4				
Transtate Airlines													10	10	13	15	15					
National Jet Systems Pty Ltd												2	2	2	2							
Sabair Airlines								1	1	4	5	5	5									
Air Swift									2	2	4	3	2									
Cape York Air												2	2									
Air Mount Isa											5	5										
Majestic Airways											2	1										
Air Cairns										9	9											
Air Maroochy Airlines										1	4											
Australian Regional Airlines (Qld)					8	12	13	13	10	8												
Australian Airlines	23	19	20	20	10	9	6	7	6	7												
East West Airlines	1	1	2	4	7	8	7	6	7	6												
Air New South Wales	1	1	1	1	2	1	4	5	3	5												
Australian Airlink								3	5	4												
Airlines Of Western Australia					2	1	3	4	3	4												
Compass Airlines								1	2	2												
Southern Pacific Regional Airlines								2	2	1												
Air Midwest									1	1												
Airlines Of Northern Australia	1	1	1	1	2	1	3	4														
Sunbird Airlines Pty Ltd		14					28															
Falcon Airlines				17	17	17	17															
Augusta Airways Pty Ltd	9	10	10	10	9	9	9															
Queensland Pacific Airlines					2	16	8															
Australian Leased						7	6															
Ansett Leased						6	4															
Countryair Pty Ltd							4															
Norfolk Island Airlines Pty Ltd		8	6			2	1															
Royal Australian Air Force						5																
Piccolo Airlines			8	8	6	4																
Foreign Airlines						1																
Sungold Airlines				6	14																	
Air Queensland Ltd	50	33	34	31	13																	
Lloyd Aviation Jet Charter Pty Ltd				5	5																	
Challenge Air Services					2																	
North Australian Air Charter					2																	
Coddair Airlines Pty Ltd	17	17																				
South Burnett Aviation	3	5																				
Air Whitsunday	3	2																				
Henebery Aviation Company	1	1																				
Queensland Outback Tourist Services	2																					
Rundle Air Service Pty Ltd	2																					

Source: BITRE time series estimates.

South Australia

The number of airlines serving regional airports in South Australia has declined since 1984 (Figure 2.27). While there were 13 airlines serving 36 regional airports in 1984, there were only 6 airlines serving 19 regional airports in 2005. Of those six airlines, O'Connors Air Services is the only longstanding airline to have offered services since 1984 (or earlier). Emu Air Charter started to serve regional airports in South Australia from 1991 (Table 2.12).

Figure 2.27 Number of airlines serving regional airports in South Australia, 1984 to 2005



Source: BITRE time series estimates.

Table 2.12 Airlines serving regional airports in South Australia, 1984 to 2005

No. of airports served

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Airlines Of South Australia	5	5	4												4	4	6	5	4	16	16	13
Regional Express																			7	7	7	7
O'Connors Air Services	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	2	2	2
Great Western Airlines																				2	2	2
Eastern Australia Airlines																						2
Emu Air Charter Pty Ltd								1	1	2	2	2	2	1	1	1	1	1	1	3	1	1
Skywest Airlines Pty Ltd																				1		
Kendell Airlines	1	1	9	10	8	9	10	9	9	8	8	8	8	8	7	7	7	7	7			
Whyalla Airlines							3	1	4	4	4	4	3	3	3	3	3					
Southern Sky														2	6	6						
Eyre Charter Pty Ltd	2	3	3	3	3	3	2	2	2	3	2	2	6	4	4							
Southern Australia Airlines Pty Ltd			1	1	1	1	1	1	1	1	1	1	1	1	1							
Augusta Airways Pty Ltd	15	15	14	13	13	13	13	2	2	2	2	2	2	3								
Albatross Airlines	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
Lincoln Airlines Pty Ltd				1	1	1	1	1	1	1	1	1	1	1								
Sa Regional											1	1	1									
Airtransit-air Kangaroo Island	3	3	4	4	4	4	4	4	4	3	3											
Air Central Air					2	3	2															
Lloyd Aviation Jet Charter Pty Ltd		4	4	4	4	3																
State Air Pty Ltd	6	6	6		2	2																
Chartair	3	3			2	2																
Wudinna Air Services		2	2	2																		
Rossair Pty Ltd	6	6	3																			
Opal Air Pty Ltd	7	5	3																			
Murray Valley Airlines	2	1	1																			
East West Airlines	1																					

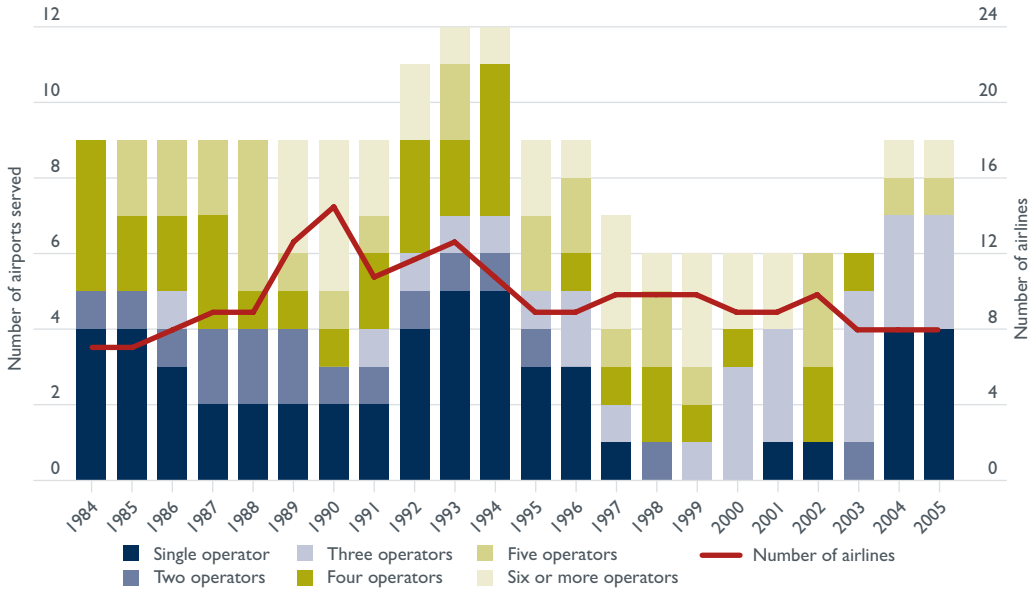
Source: BITRE time series estimates.

In 2005, Airlines of South Australia played an important role in serving the state's regional airports. It provided services to 13 regional airports. Regional Express offered services to seven regional airports in the state.

Tasmania

Figure 2.28 shows that the trend in the number of airlines serving regional airports in Tasmania was generally stable over time, with the exception of a surge in the late 1980s and early 1990s. While there were seven airlines serving nine regional airports in 1984, this figure increased to eight airlines in 2005. All airlines operating from regional airports in Tasmania in 1984 were no longer in operation in 2005 (Table 2.13). In 2005, Airlines of Tasmania played an important role operating services to five regional airports. Tasair offered services to four regional airports in the state.

Figure 2.28 Number of airlines serving regional airports in Tasmania, 1984 to 2005



Source: BITRE time series estimates.

Table 2.13 Airlines serving regional airports in Tasmania, 1984 to 2005

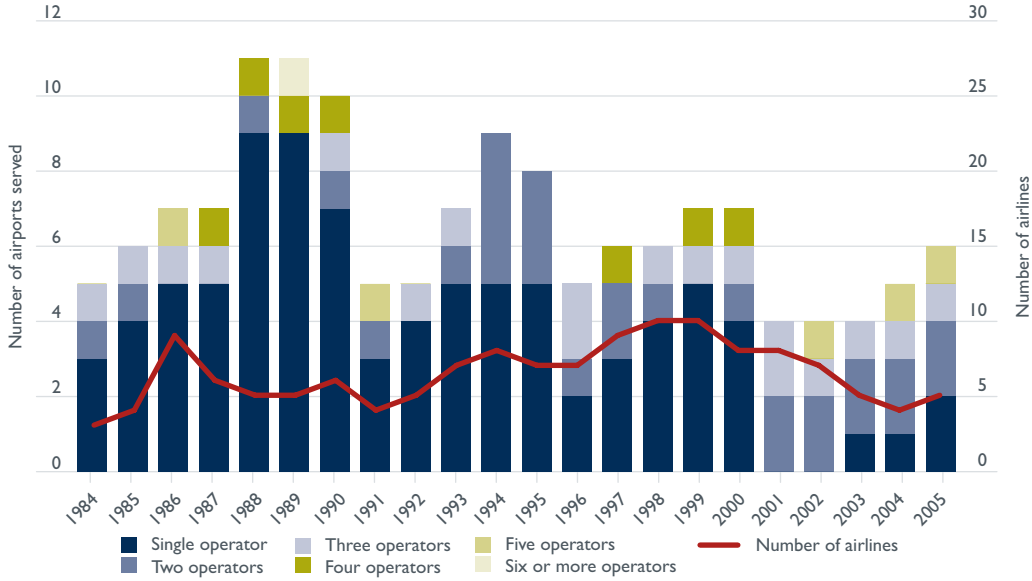
	No. of airports served																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Airlines Of Tasmania																				2	5	5
Tasair															4	4	4	4	4	4	4	4
Regional Express																			3	3	3	3
Eastern Australia Airlines							2	2	2										2	2	3	2
Qantas Airways						1				2	2	2	2	2	1	2	2	2	2	2	2	2
Virgin Blue																		1	2	2	2	2
Jetstar																					2	2
King Island Airlines							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Island Airlines Tasmania																	2	2	2	2		
Kendell Airlines	1	1	1	1	1	3	3	3	4	3	4	3	3	3	3	4	5	5	4			
Southern Australia Airlines Pty Ltd									2	2	2	3	3	4	4	4	4	4	2			
Ansett Airlines Of Australia	4	4	4	4	4	4	2	2	3	2	2	3	2	2	2	2	2	2	2			
Impulse Airlines																		1				
Paravion														2	2	4	4					
Island Airlines													2	3	2	3	3					
Australian Air Charterers Pty Ltd			2	2	4	5	6	6	6	6	6	5	5	5	5	5						
Geelong Flight Centre												2	2	2	2	2						
Airlines Of Tasmania Pty Ltd	9	9	9	9	9	9	9	9	11	11	10	9	9	7								
Phillip Island Air Charter	1	1	1	1	1	1	1	1	2	2	1	1										
Promair Australia							2	2	2	3	2											
Hazelton Airlines Pty Ltd										1	1											
Peninsula Air Services											1											
Australian Airlines	2	2	2	2	2	2	2	2	2	2												
East West Airlines	3	4	4	3	4	3	4	3	1	1												
Air New South Wales	1	2	2	3	2		2	2	1	1												
Flinders Island Airlines				2	2	3	4															
Australian Leased						2	2															
Ansett Leased						1	1															
Norfolk Island Airlines Pty Ltd							1															
Royal Australian Air Force						2																
Foreign Airlines						1																

Source: BITRE time series estimates.

Victoria

In Victoria, while there were three airlines serving five regional airports in 1984, there were five airlines serving six regional airports in 2005 (Figure 2.29). All airlines

Figure 2.29 Number of airlines serving regional airports in Victoria, 1984 to 2005



Source: BITRE time series estimates.

operating from regional airports in Victoria in 1984 were no longer in operation in 2005 (Table 2.14).

In 2005, the five airlines serving regional airports in Victoria were Sharp Aviation, Regional Express, Eastern Australia Airlines, O'Connors Airlines, and Brindabella Airlines.

Table 2.14 Airlines serving regional airports in Victoria, 1984 to 2005

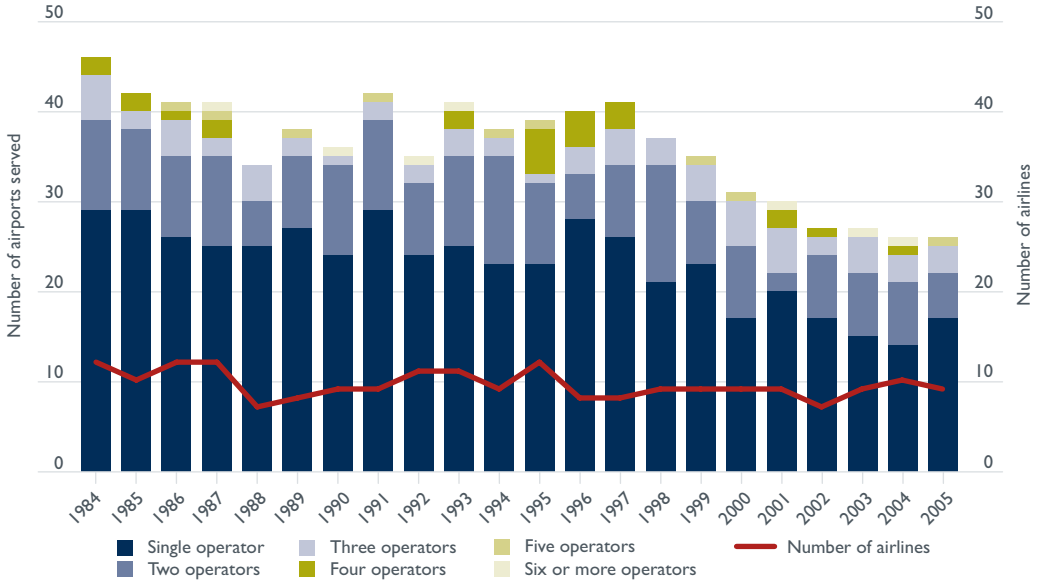
	No. of airports served																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Sharp Aviation																		1	1	1	3	3
Regional Express																			3	3	2	2
Eastern Australia Airlines																	1	1	2	2	2	2
O Connors Air Services															1	1	1	1	1	1	1	1
Brindabella Airlines																						1
Island Airlines Tasmania																	1	1	1	1		
Kendell Airlines	4	4	2	3	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2			
Southern Australia Airlines Pty Ltd			1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2			
Hazelton Airlines Pty Ltd										2	2	2	2	1	1	1	1	1				
Sunstate Airlines																		1				
Horizon Airlines															1	2	4					
Island Airlines													1	1	1	1	1					
Geelong Flight Centre												1	1	1	1	1						
Australian Air Charterers Pty Ltd														1	1	1						
Shepparton Airlines														1	1	1						
Ibis Air																1						
Tamair													1	1	1							
Airlines Of Tasmania Pty Ltd											2	2	2	2								
Peninsula Air Services										1	2	2										
Phillip Island Air Charter	1	1	1	1	1	1	1	1	1	1	1	1										
Promair Australia							1	1	1	1	1											
Gawne Airlines											1											
Monarch Air									1	1												
Flinders Island Airlines				3	9	9	7															
Norfolk Island Airlines Pty Ltd							1															
Air New South Wales					1	1																
Suncity Airlines			1	1																		
Western Nsw Airlines Pty Ltd			1	1																		
Regional Airlines			2																			
Murray Valley Airlines	1	1	1																			
Pacific Aviation Pty Ltd		1	1																			
Lloyd Aviation Jet Charter Pty Ltd			1																			

Source: BITRE time series estimates.

Western Australia

Figure 2.30 shows that the trend in the number of airlines serving regional airports in Western Australia has been relatively stable over time. While there were 12 airlines serving 46 regional airports in 1984, there were nine airlines serving 26 regional airports in 2005. Of the nine airlines serving regional airports in 2005, Skywest is the only longstanding airline to have provided services in the state since 1984 (or earlier). Skywest continues to play an important role in the provision of services at regional airports in Western Australia, serving 13 regional airports in 2005 (Table 2.15).

Figure 2.30 Number of airlines serving regional airports in Western Australia, 1984 to 2005



Source: BITRE time series estimates.

Table 2.15 Airlines serving regional airports in Western Australia, 1984 to 2005

No. of airports served

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Skywest Airlines Pty Ltd	19	19	18	16	16	17	17	17	11	13	16	20	22	21	15	14	14	17	15	16	12	13
Qantas Airways											4	4	5	5	5	5	5	6	9	7	9	8
Skippers Aviation																2	4	4	4	4	8	6
Golden Eagle Aviation												4	5	6	3						6	5
National Jet Systems Pty Ltd												3	3	5	2	2	2	2	2	2	3	3
Great Western Airlines																				4	2	2
Air North Regional																		2	3	2	2	2
Maroomba Airlines															4	3	3	1	1	1	1	1
Virgin Blue																				1	1	1
Northwest Regional																	6	7	6	5	5	
Ansett Airlines Of Australia					1	1	1	2	3	15	14	14	14	13	12	9	11	10				
Western Airlines (Wa)						5	4	4	4	4	4	4	4	4	4	4	4	4				
Broome Airlines																5	4					
Ord Air Charter Pty Ltd	10	10	11	9	9	9	9	15	12	12	9	9	9	9	8	10						
Rottnest Airbus				1	1	2	2	2	1	1	1	1	1	3	3							
Qwestair							1	1	1	4	4	5										
Horizon Airways										1	2	2										
King Leopold Air												2										
South-west Air												1										
Goldfields Air Services	4	4	4	4	6	7	6	5	4	4	4											
Airlines Of Western Australia	12	12	12	13	12	12	12	13	12	12												
Australian Airlines	1	1	1	1				1	2	1												
East West Airlines	2	2	2	4	2					1												
Air North International Pty Ltd	1								1													
Australian Airlink									1													
Airlines Of Northern Australia							1															
Ansett Leased						1																
Avior Pty Ltd	11	8	9	8																		
Laurie Potter Airlines				8																		
Tillair			2	2																		
Barrack Helicopters			1	1																		
Midstate Airlines			1	1																		
Chartair	2	2	2																			
Rottnest Airlines		1	1																			
Fortescue Air Charter	2	2																				
Jan Beers Aviation	5																					
Paggi S Aviation	2																					

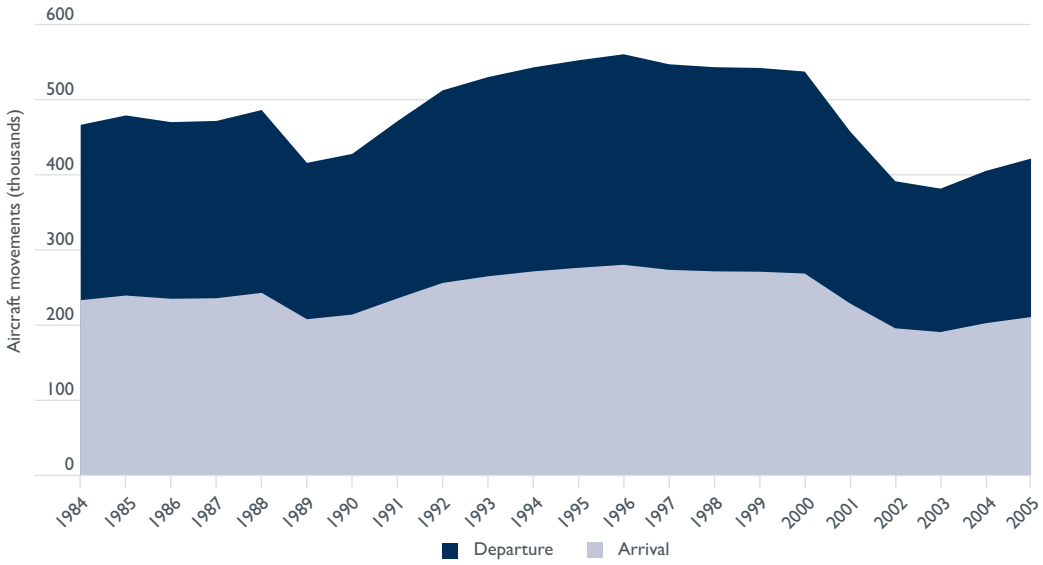
Source: BITRE time series estimates.

2.3 Aircraft movements and aircraft fleets at regional airports

2.3.1 Aircraft movements

Figure 2.31 depicts the trend of aircraft movements at regional airports for the past 22 years. Aircraft movements represent all inbound and outbound flights at regional airports. It showed an increase after deregulation and stayed relatively stable during the 1990s. The trend started to decline in 2001 following the collapse of Ansett Airlines, September 11 in the US and the SARS virus outbreak in Asia. Total aircraft movements to regional airports have recovered slightly since 2003.

Figure 2.31 Aircraft movements at regional airports, 1984 to 2005



Source: BITRE time series estimates.

Although the frequency of flights is primarily driven by the demand for air services, it is the type and size of aircraft used that tends to dictate the trend of aircraft movements.

In the short run, many airlines find that introducing suitable aircraft in response to demand fluctuations to achieve optimal fleet distribution is a challenging process. It is not often economically viable for airlines to purchase aircraft for specific use in each route type. In many cases, matching aircraft capacity to demand in real time has become a matter of reallocating the best option of existing aircraft for the best use of the given fleet.

In the long run, the industry shows the tendency of moving towards the use of larger aircraft. In 1984, there were 233 000 scheduled departures at regional airports that transported 4.3 million passengers. In 2005, there were 215 000 departures at regional airports that transported 8.8 million passengers. Comparatively, there were almost twice as many passengers in 2005 than in 1984, in spite of a lower frequency of flights in 2005 than in 1984. The statistics above indicate that the composition of aircraft type and seating capacities used at regional airports has evolved over the years.

2.3.2 Aircraft type

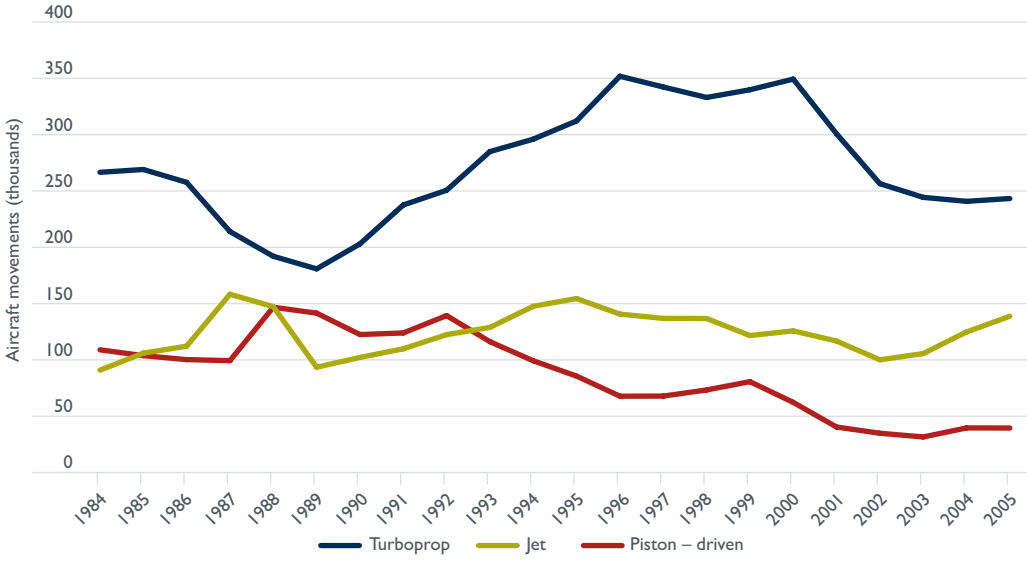
Regional air services in Australia are serviced by three aircraft types: jet, turboprop and piston-driven, ranging from single engine to a maximum of four engines.

Figure 2.32 shows aircraft movements by aircraft type. An increase or decrease of aircraft movements by a particular aircraft type does not represent an increase or decrease in the actual number of aircraft types used in regional aviation. Rather, changes in number of aircraft movements by aircraft type are closely related to the seating capacity of an aircraft type. For example, an increased use of jet aircraft with greater seat capacity may correspond to a reduction in service frequency. Thus, the number of aircraft movements by aircraft type represents the service frequency rather than the actual number of the aircraft type used at regional airports.

Jet

As shown in Figure 2.32, the number of movements by jet aircraft at regional airports has remained relatively constant over the study period. However, the most common jet aircraft types serving these airports have changed with the Boeing 727, Fokker F28, McDonnell Douglas DC9 and Boeing 737-200 being the most common in the mid-1980s. By the mid-1990s the Boeing 737-400/300, BAE 146 and Fokker F28 were the dominant types, while in 2005 the Boeing 737-800/700/400, Boeing 717 and Airbus A320 were most common.

Figure 2.32 Aircraft movements at regional airports, by aircraft type, 1984 to 2005



Source: BITRE time series estimates.

Turboprop

The number of aircraft movements by turboprop aircraft displays a generally upward trend between 1990 and 2000. The trend took a downward turn after 2000. Over the past 22 years, more than 50 per cent of scheduled flights to and from regional airports were performed using turboprop aircraft. In spite of the decreasing trend in recent

years, the proportion of aircraft movements at regional airports by this aircraft type remains higher than piston-driven or jet aircraft.

The most common types of turboprop aircraft have changed over the study period in a similar way to jets. In the mid-1980s the Embraer EMB110, Swearingen Metro II, DHC-6 Twin Otter and Fokker F27 were the most common types. The mid-1990s saw a wide number of turboprop types in common use, including: Saab 340; DHC-8-100/200; Fairchild Metro III/23; Fokker 50; Embraer EMB120; Shorts 360; Embraer EMB110; DHC-6 Twin Otter; and BAE Jetstream 31. In 2005 the most common types were the Saab 340, DHC-8-100/300, Fairchild Metro III/23 and Embraer EMB120.

Piston-driven

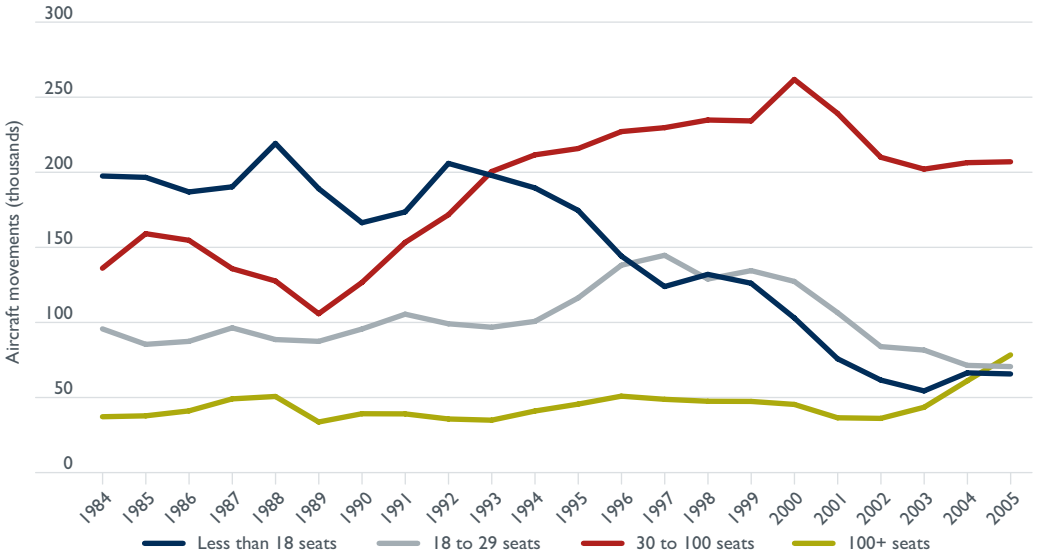
The number of aircraft movements by piston-driven aircraft has generally declined over the years. Many models of piston-driven aircraft have been used in regional areas since 1984 (or earlier). Most of them have 10 seats or less. Unlike the jet and turboprop aircraft serving regional airports, three types of piston-driven aircraft have remained the most common over practically the whole study period. These three aircraft types are the Cessna 404 Titan (last manufactured in 1982), Piper PA31-350 Chieftain and Cessna 402. All of these aircraft ceased production in the 1980s but have not been replaced in the Australian fleet by newer models, leading to an increasingly older fleet of piston-engined aircraft in Australian skies.

See Appendix A, Table A3, for detailed statistics on aircraft movements at regional airports by aircraft type.

2.3.3 Aircraft size

Figure 2.33 shows the number of aircraft movements at regional airports by four categories of seating capacities.

Figure 2.33 Aircrafts movements at regional airports, by aircraft size, 1984 to 2005



Source: BITRE time series estimates.

Corresponding to the declining trend of aircraft movements by piston-driven aircraft, the number of movements by aircraft with less than 18 seats displays a consistent downward trend over the past 22 years. Before 1990, on average, 40 per cent of scheduled flights to and from regional airports were performed by aircraft with less than 18 seats. This proportion has fallen under 20 per cent in the past few years.

The number of aircraft movements by aircraft with 18 to 29 seats was fairly steady between 1984 and 1994. The trend peaked in 1997 and started to move downward gradually after 2002. The proportion of aircraft movements by this category of seating capacity remained relatively constant at around 20 per cent over the 1990s. This proportion fell to around 15 per cent by 2005.

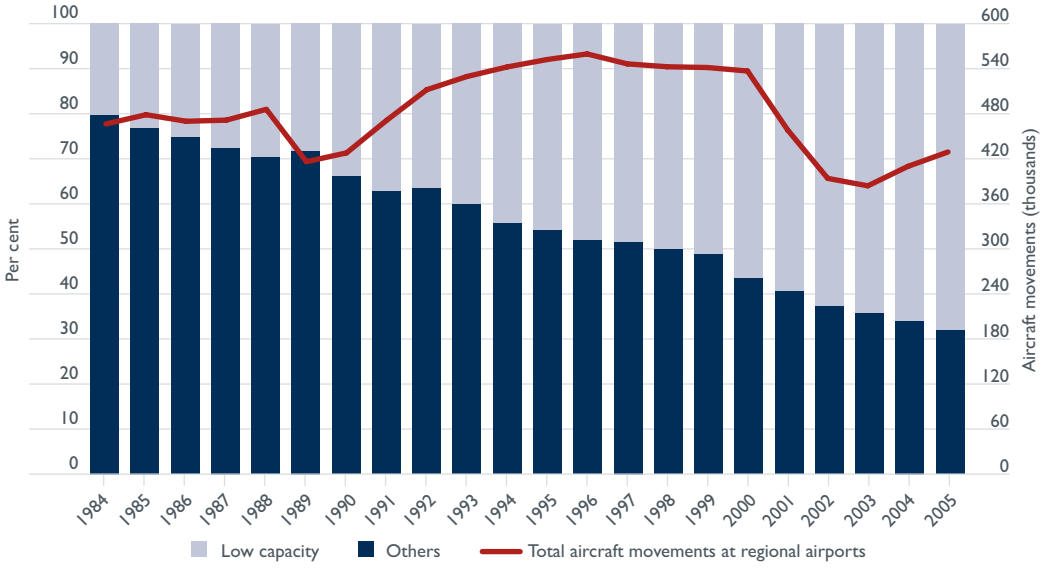
While aircraft with 30 to 100 seats have dominated aircraft movements since 1994, the trend started to move downward after 2001 and has remained reasonably flat for the past few years. In 2005, the proportion of aircraft movements by this category of aircraft remained high at around 50 per cent.

Aircraft movements by aircraft with 100 plus seats have shown a gradually increasing trend over time. Since 2003, the trend has increased at a relatively higher rate than before. The proportion of movements by such aircrafts increased from around 8 per cent in 1984 to 18 per cent in 2005.

2.3.4 Aircraft payload

Aircraft payload has traditionally been used to categorise aircraft type into high and low capacity. Low capacity is defined as aircraft of 38 seats capacity or less or 4200 kg or less. Figure 2.34 shows proportions of aircraft movements by aircraft of the standard payload weight of less than 4200 kg and more than 4200 kg. The percentage of aircraft movements by low capacity aircraft at regional airports was as high as 80 per cent in 1984, and has gradually reduced over time to slightly over 30 per cent in 2005. It is likely that due to cost advantage, the trend has been moving toward using large aircraft.

Figure 2.34 Aircraft movements at regional airports, by payload range, 1984 to 2005



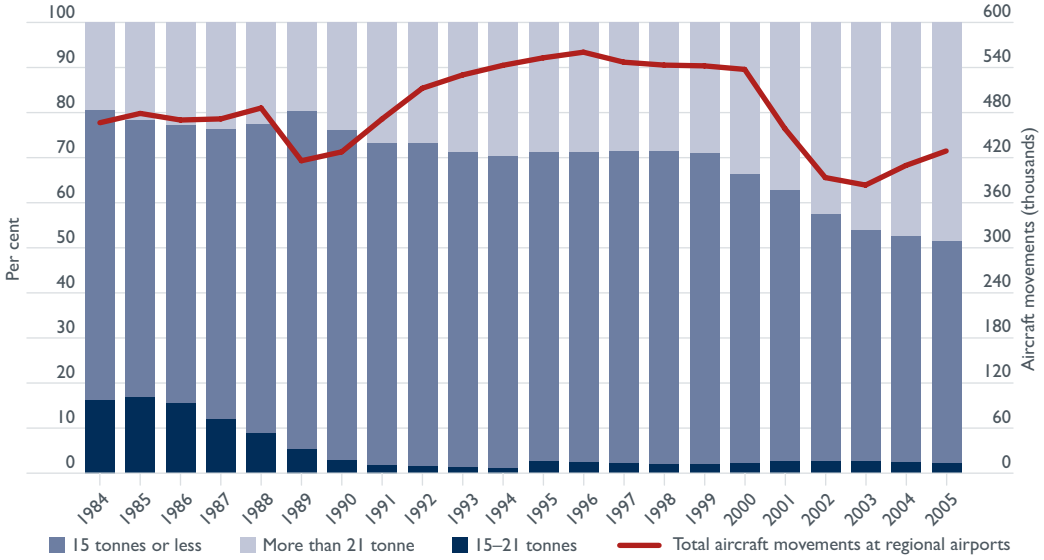
Source: BITRE time series estimates.

2.3.5 Aircraft take-off weight

Aircraft take-off weight has been used by the Enroute Charges Rebate Scheme in recent years as a basis to determine which aircraft are entitled to receive subsidies for Airservices Australia's enroute air traffic control charges on regular public transport and aeromedical aircraft. The current eligibility criterion for the scheme requires aircraft to be less than 15 tonnes take-off weight. The scheme also allows certain aircraft with a maximum take-off weight between 15 and 21 tonnes in Western Australia to be subsidised under some terms and conditions.

Figure 2.35 shows the proportion of aircraft movements at regional airports by three groups of take-off weight 15 tonnes or less, 15–21 tonnes and more than 21 tonnes. The proportion of movements by aircraft 15 tonnes or less has consistently been above 50 per cent in the past two decades. The proportion of movements by aircraft of 15–21 tonnes has declined from 20 per cent in 1984 to less than 5 per cent in the last 15 years. In contrast, the proportion of movements by aircraft of more than 21 tonnes has increased over time, reaching 50 per cent by 2005.

Figure 2.35 Aircrafts movements at regional airports, by take-off weight, 1984 to 2005



Source: BITRE time series estimates.

2.4 Summary

A number of trends emerge from the analysis of trends in regional aviation for the past 22 years:

1. **Passenger growth at regional airports**
   - An upward trend for the number of passenger movements at regional airports.

Passenger movements at regional airports rose from 8.5 million in 1984 to 17.5 million in 2005, an average annual growth rate of 3.5 per cent. Notably, with recovery from the post-Ansett collapse downturn in 2001, the annual growth rate was 18.3 per cent from 2003 to 2004 and 14 per cent from 2004 to 2005.

2. **Number of regional airports**

   - A downward trend for the number of regional airports served by airlines.

   The total number of regional airports served by airlines declined from 278 in 1984 to 170 in 2005.

3. **Distribution of passenger movements by the ASGC Remoteness Classification**

   - The number of passenger movements in every remoteness area class of regional Australia exhibits an upward trend.

   The number of passenger movements at regional airports have consistently been higher in inner and outer regional Australia than in remote and very remote Australia.

4. **Distribution of regional airports by the ASGC Remoteness Area Classification**

   - The number of regional airports served in every remoteness area class of regional Australia exhibits a general downward trend.

   Over the past 22 years, very remote Australia experienced the greatest reduction in the number of regional airports served by airlines, followed by remote Australia, outer regional Australia and inner regional Australia. Despite the significant fall over time, there remains a higher number of airports in very remote Australia than in other ASGC Remoteness classes of regional areas.

   The increase in passenger movements at regional airports coupled with the decline in the number of regional airports over the years, resulted in a pronounced upward trend in the average annual passenger movements per regional airport.

5. **Airlines serving regional airports.**

   - The number of airlines serving regional airports displays a general downward trend.

   The level of market concentration in the industry has increased over time. In 1984, regional airports were served by 52 airlines and processed 8.5 million revenue passengers. In 2005, regional airports were served by 34 airlines and processed 17.5 million revenue passengers. There are fewer airlines accounting for a growing industry output.

   There has also been significant churn in airlines serving regional airports over the years. Out of 34 airlines serving regional airports in 2005, only five airlines have continued to provide services since 1984.

   Over the past 22 years, more than half of the regional airports were served by a single operator.

6. Aircraft movements and aircraft fleets at regional airports

- While there were almost twice as many passengers in 2005 than in 1984, the number of flights was lower in 2005 than in 1984.
- Before 1990, an average of 40 per cent of scheduled flights to and from regional airports were performed by aircraft with less than 18 seats. This proportion fell to less than 20 per cent in the past few years of the study period.
- Aircraft with 30 to 100 seats have continued to dominate aircraft movements since 1994.
- There has been an increase in aircraft movements by high capacity aircraft and aircraft with take-off weights of more than 21 tonnes.

Overall, the industry is moving towards using larger aircraft to serve regional airports.

Chapter 3

Past performance of air services on regional air routes

bitre

Chapter 3 Past performance of air services on regional air routes

3.1 Overview

Figure 3.1 illustrates revenue passengers carried on regional air routes and air routes between major cities from 1984 to 2005. Revenue passengers carried on regional air routes rose from 6.5 million in 1984 to 16 million in 2005, an average annual growth rate of 4.4 per cent. Over the same period of time, revenue passengers who travelled on air routes between major cities increased at an average annual growth rate of 6.2 per cent.

The figure also shows the share of revenue passengers on air routes between major cities and regional air routes. The share of revenue passengers on regional air routes (which constitutes passengers on air routes between major cities and regional areas and passengers on air routes between regional areas) has mostly fluctuated within a range of 35 per cent to 45 per cent over the past 22 years. The share of revenue passengers on regional air routes was 48.5 per cent in 1984 and 40.8 per cent in 2005.

As in Chapter 2, the analysis provided in this chapter is presented using four interval periods over the past 22 years, leaving out 1989 to 1990 to abstract the short term effects of the Australian pilots' dispute.

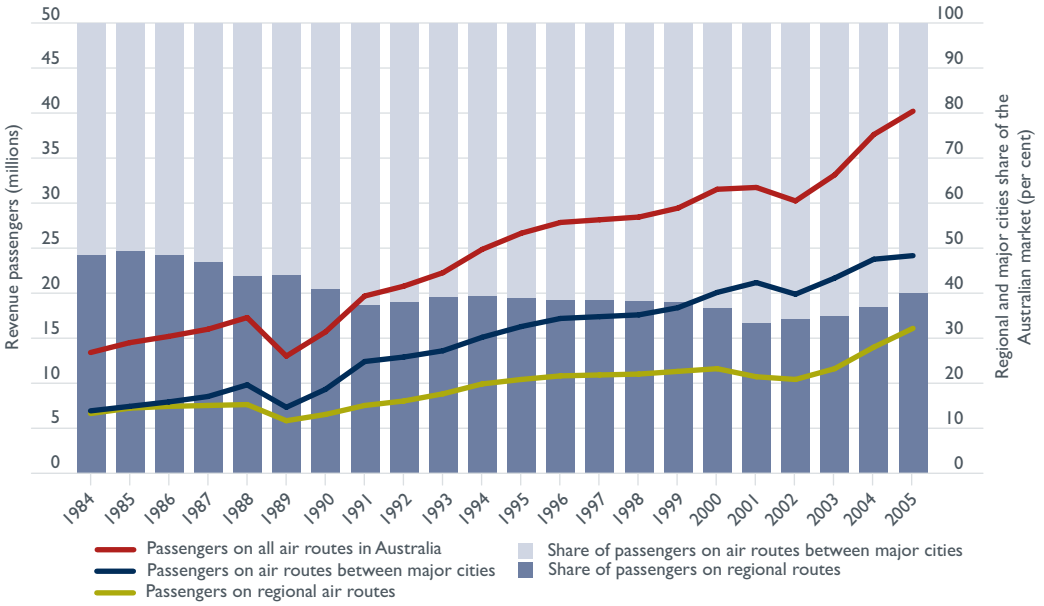
Between 1984 and 1988, the growth of revenue passengers on regional air routes was slow and steady. The number of revenue passengers increased from 6.5 million in 1984 to 7.5 million in 1988. Overall, there was an increase of one million revenue passengers over the period, an average growth rate of 4 per cent per annum.

Between 1989 and 1990, passenger movements on regional air routes fell from 7.5 million to 5.7 million as a result of the Australian pilots' dispute, which involved pilots from major airlines at the time, such as Ansett, East West, Ipec and Australian Airlines. It resulted in nearly 80 per cent of pilots resigning and caused considerable disruption, particularly to scheduled air services on domestic air routes (Paterson, 2003). Inevitably, the dispute also affected air services on regional air routes. In some cases, airlines outside the dispute were permitted to operate over certain regional air routes to make up the shortfall in capacity. In many cases, air services normally provided by major airlines involved in the dispute were simply cancelled. Leading up to deregulation in 1990, the dispute was a prelude to a complete restructuring of the industry.

Between 1991 and 1995, revenue passengers on regional air routes increased significantly. Passenger numbers rose from 7.4 million in 1991 to 10.3 million in 1995, an average annual growth rate of 8.9 per cent. The growth continued at a much slower average rate of 2.2 per cent per annum between 1995 and 2000.

Between 2000 and 2005, the annual average growth rate of revenue passengers on regional air routes was 6.8 per cent. Following the terrorist attacks in the United States in September 2001 and the collapse of Ansett Australia, revenue passengers on regional air routes fell to –8.4 per cent between 2000 and 2001, declining from 11.5 million in 2000 to 10.6 million in 2001 with a further decline to 10.3 million in 2002. By 2003, the regional market showed signs of recovery with an increase of passenger movements on regional air routes to 11.6 million. High growth continued in 2004 (14 million) and 2005 (at a record level of 16 million).

Figure 3.1 Revenue passengers on regional air routes and air routes between major cities, 1984 to 2005



Source: BITRE time series estimates.

Figure 3.2 presents the number of revenue passengers on regional air routes by further dividing the data into revenue passengers on air routes between major cities and regional areas and revenue passengers on air routes between regional areas only.

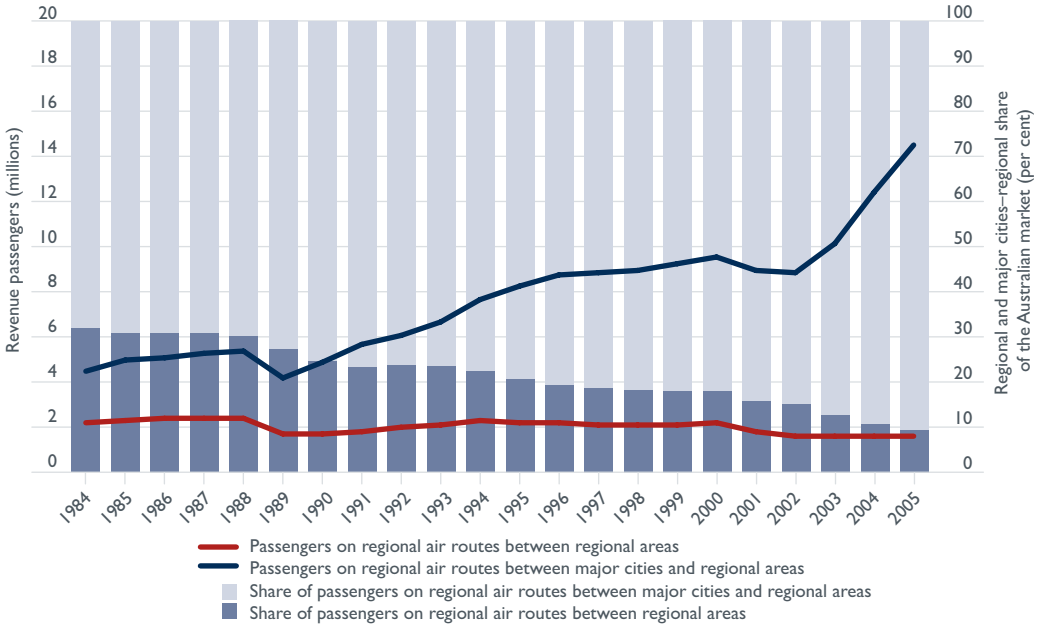
While the proportion of passengers on air routes between major cities and regional areas exhibits a general increase over the years, the proportion of passengers on air routes between regional areas has consistently declined. In 1984, the proportion of revenue passengers on air routes between regional areas constituted close to 32 per cent of total passengers on all regional air routes. The proportion fell to 23 per cent in 1992, 15 per cent in 2002 with a further decrease to 9 per cent in 2005.

The number of revenue passengers on air routes between major cities and regional areas increased from 4.4 million in 1984 to 14.5 million in 2005, an average annual growth rate of 5.6 per cent. On the other hand, the number of revenue passengers on air routes between regional areas decreased from 2.2 million in 1984 to 1.5 million in 2005, an average annual growth rate of –1.5 per cent.

Between 1984 and 1988, the average annual growth rate was 4.6 per cent for passenger numbers on air routes between major cities and regional areas and 2.5 per cent on air routes between regional areas. Between 1991 and 1995, passenger numbers were growing strongly on air routes between major cities and regional areas as well as air routes between regional areas, at an average annual growth rate of 9.8 per cent and 5.8 per cent respectively. Between 1998 and 2000, the average annual growth rate for passenger numbers on air routes between major cities and regional areas grew at a much slower average rate of 2.9 per cent. In the same period, the average annual growth rate on air routes between regional areas was –0.6 percent. The most prominent contrast in passenger growth rates was between the two groups of regional air routes in the period 2000 to 2005. The average annual growth rate was close to 9 per cent in this period on air routes between major cities and regional areas, while it was –6.2 per cent on air routes between regional areas.

It is evident that passenger growth on regional air routes over time, in particular after deregulation, was largely due to an increase in passenger numbers carried between major cities and regional areas.

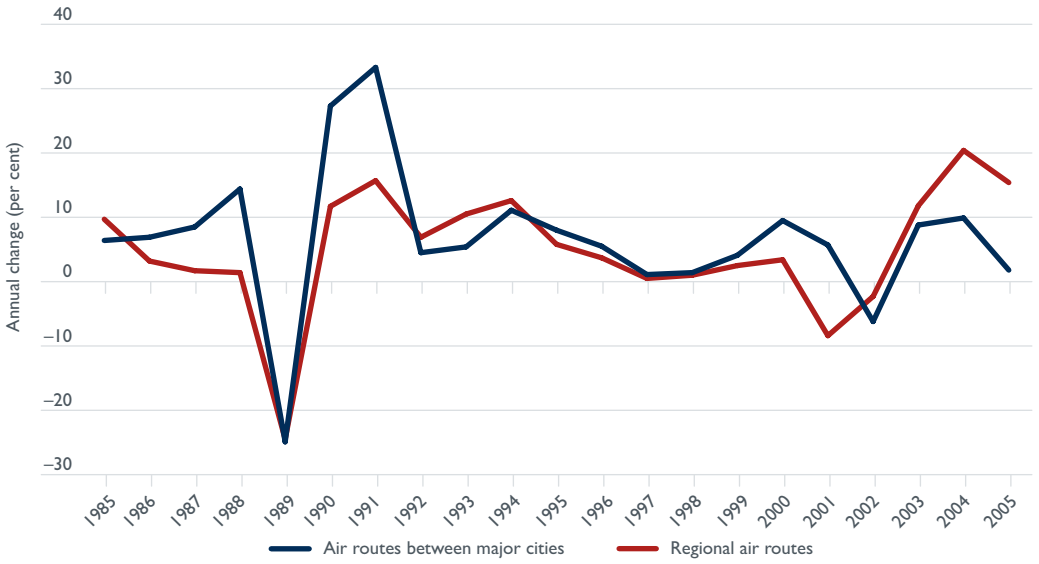
Figure 3.2 Revenue passengers on regional air routes, by summarised ASGC Remoteness Classification, 1984 to 2005



Source: BITRE time series estimates.

Figure 3.3 shows the annual percentage change in the number of revenue passengers carried on regional routes and routes between major cities from 1984 to 2005. Overall, the trend of regional air routes closely resembled the trend of air routes between major cities. Generally, the trend of air routes between major cities was slightly higher than that of regional air routes. However, these trends reversed after 2002.

Figure 3.3 Per cent change in revenue passengers carried on regional air routes and air routes between major cities, 1984 to 2005



Source: BITRE time series estimates.

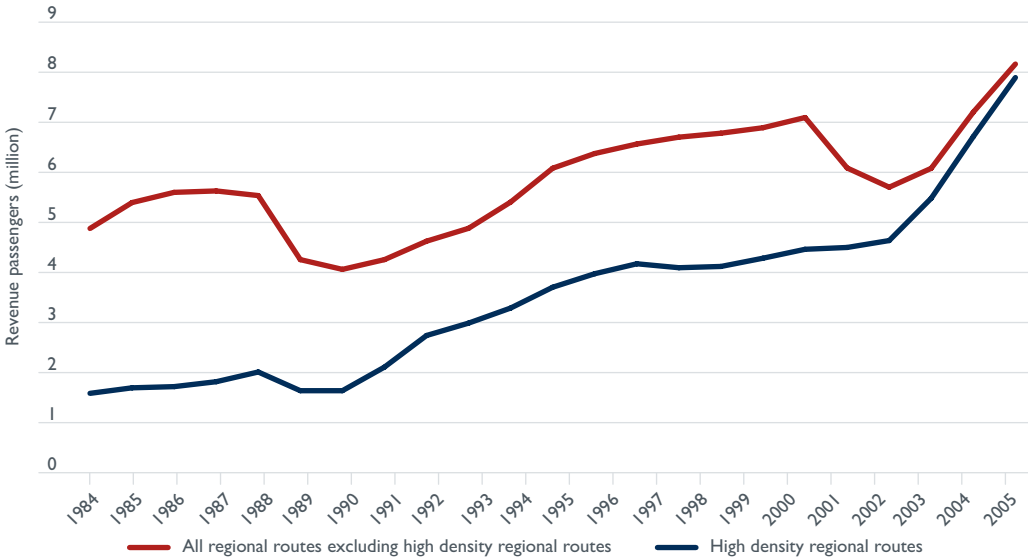
Passenger numbers on regional air routes were increasing at a decreasing rate between 1984 and 1989. Trends for both regional routes and routes between major cities moved to a negative percentage between 1989 and 1990, where the number of passengers fell dramatically. Following deregulation in the early 1990s, there was a strong growth in passenger numbers on both regional air routes and air routes between major cities. Rates of change for both air route types remained positive throughout the 1990s. After 1992, these trends again slowed down significantly. They encountered another negative period in 2000 and 2001 following the collapse of Ansett Airlines. The industry showed early signs of recovery in 2002 and regained its momentum by 2003. Passenger numbers on regional air routes increased by 12 per cent between 2002 and 2003, 20 per cent between 2003 and 2004, and 15 per cent between 2004 and 2005.

Regional air routes between major cities and regional areas typically include a number of high density routes, mainly serving major tourist destinations. The majority of such routes are generally served by major airlines operating high capacity aircraft, rather than smaller airlines using low capacity fleets. It may be useful to compare between the trend in passenger growth on high density regional routes and that on regional routes excluding high density routes.

Figure 3.4 shows a further analysis of passenger numbers on regional air routes. Passenger numbers on regional air routes were disaggregated into selected high density regional routes[7] and other regional routes.

7. The high density regional routes were selected based on two criteria:
   a. If a regional airport offers direct air services to more than one major city, all routes from the regional airport to major cities will be included in the route selection.
   b. The second criterion is built on the first criterion. Given the first criterion, all routes which carried more than 250 000 revenue passengers in 2005 were grouped as high density regional routes.

Figure 3.4 Revenue passengers on high density regional routes and other regional routes, 1984–2005



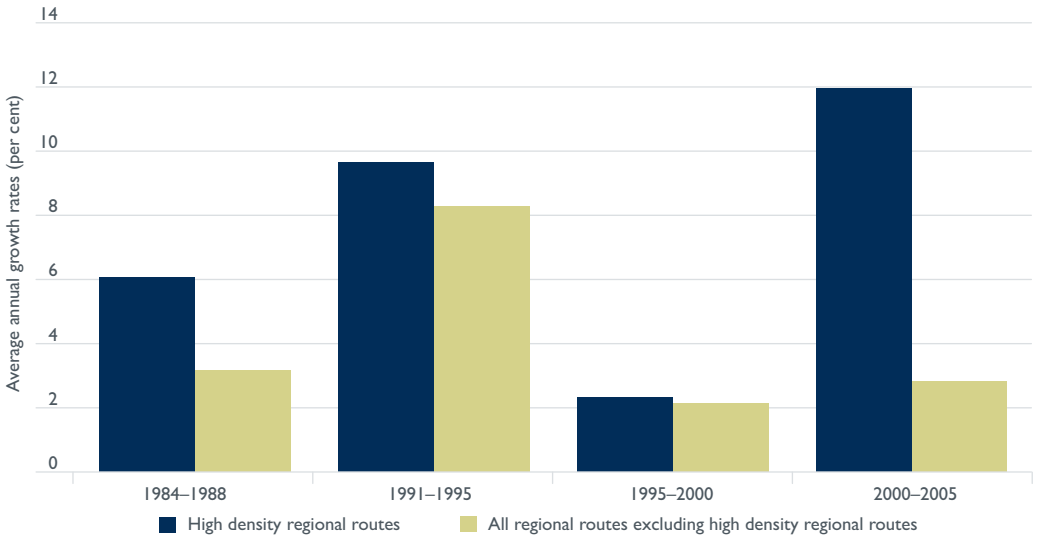
Source: BITRE time series estimates.

Passenger numbers on selected high density regional routes grew from 1.6 million in 1984 to 7.9 million in 2005, an average annual growth rate of 7.9 per cent (Figure 3.4). Over the same period, passenger numbers on other regional routes grew from 4.9 million in 1984 to 8.2 million in 2005 (Figure 3.4), an average annual growth rate of 2.5 per cent. Passenger numbers on high density routes increased significantly after 2002, almost reaching the total passenger numbers of all other regional routes by 2005.

Figure 3.5 shows average annual growth rates of high density regional routes and other regional areas in four interval periods over the past 22 years. Between 1984 and 1988, the average annual growth rate was 6.1 per cent on high density regional routes and 3.2 per cent on the other regional routes. Between 1991 and 1995, passenger numbers increased significantly on high density and other regional routes at an average annual growth rate of 9.7 per cent and 8.4 per cent respectively. Passenger numbers grew at a much slower rate between 1995 and 2000. The average annual growth rate was 2.3 per cent on high density regional routes and 2.2 per cent on other regional routes. Between 2000 and 2005, the average annual growth rate was as high as 12.1 per cent on high density regional routes and a relatively moderate growth rate of 2.8 per cent on other regional routes.

The 'high density' vs 'other' regional route analysis illustrates the high diversity encountered within regional aviation generally.

Figure 3.5 Average annual growth rates on high density regional routes and other regional routes



Source: BITRE time series estimates.

As discussed, air routes between regional areas is the only segment in the regional aviation industry that experienced a negative average annual growth rate (–1.5 per cent) over the 22 years (Table 3.1). In particular, in the period between 2000 and 2005, this segment of the regional aviation industry had a negative annual growth rate of –6.2 per cent. In contrast, over the same period, the average annual growth rate of revenue passengers on air routes between major cities and regional areas was 8.9 per cent.

Table 3.1 Average annual growth rates on regional air routes

	1984–1988	*1991–1995*	*1995–2000*	*2000–2005*	*1984–2005*
			Per cent		
Average annual growth rate for passengers on all regional air routes	4.0	8.9	2.2	6.8	4.4
Average annual growth rate for passengers on air routes between major cities and regional areas	4.6	9.8	2.9	8.9	5.9
Average annual growth rate for passengers on high density regional routes	6.1	9.7	2.3	12.1	7.9
Average annual growth rate for passengers on other major cities-regional routes (excluding high density regional routes)	3.7	9.8	3.5	5.8	4.2
Average annual growth rate for passengers on air routes between regional areas	2.5	5.8	–0.6	–6.2	–1.5
Average annual growth rate for passengers on all regional routes excluding high density regional routes	3.2	8.4	2.2	2.8	2.5

Source: BITRE time series estimates.

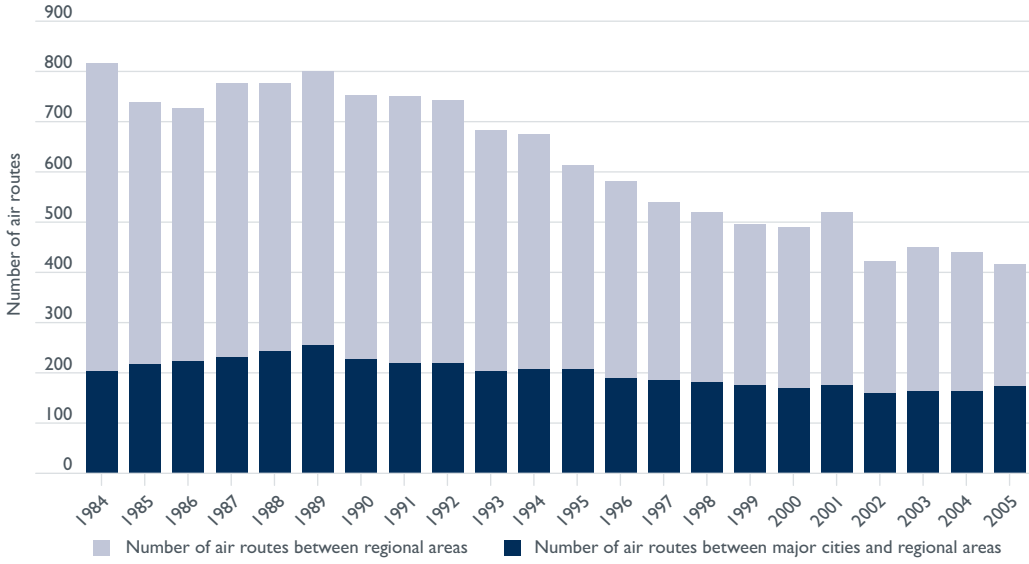
3.2 Regional air routes

The number of regional air routes has declined markedly over the past two decades (Figure 3.6) from 816 routes in 1984 to 415 routes in 2005. The network of regional air routes has also changed over time.

Mirroring the trend in the number of revenue passengers on air routes between regional areas (Figure 3.2), the number of routes between regional areas has also declined over the past 22 years. There were 613 routes between regional areas in 1984 and only 214 routes in 2005.

The number of air routes between major cities and regional areas has also declined gradually over time. The number of air routes between major cities and regional areas fell from 203 routes in 1984 to 174 routes in 2005 (Figure 3.6).

Figure 3.6 Regional air routes, 1984 to 2005



Source: BITRE time series estimates.

Overall, the number of air routes between regional areas remained higher than the number of air routes between major cities and regional areas. The number of air routes between regional areas has always constituted more than 50 per cent of all regional air routes, albeit a declining proportion over time.

The number of regional air routes is inextricably linked to the frequencies of flights, density of routes, distance between airports and type of aircraft used (among many other factors contributing to the viability and existence of an air route). The following sections explore associations between regional air routes and factors mentioned above.

3.2.1 Flight frequency

As discussed in Chapter 2, flight frequencies offered by an airline in response to a market change are implicitly constrained by its existing aircraft fleet in the short term. Aircraft size and fleet size are often linked to the presence of economies of scale. Economies of scale are cost advantages accruing from larger scale operations. Theoretically, as an airline expands, the average cost of production falls. However, expansion beyond a certain point may subject an airline to the onset of diseconomies of scale.

For an aircraft of any given size, costs per passenger fall as more seats are filled. In a situation where an airline is not in a position to appropriately match the aircraft size with the characteristics of demand, it is possible for the airline to fly bigger planes on routes with few passengers. However, it may need to reduce flight frequency to fill enough seats to cover costs and make a profit. While airlines need to trade off these economies with flight frequency, passengers on the other hand prefer a wider range of travel options. Maintaining the benefit of economies of scale could mean trading off the quality of services which may subsequently affect the demand.

In Figure 3.7a, regional air routes were disaggregated into those with an average flight frequency of three or more return flights a week and those with fewer than three return flights a week. The number of air routes with an average of less than three return flights per week has always been higher than those with an average of more than three return flights per week (Figure 3.7a). However, the gap between these trends has reduced significantly between 1989 and 2005. As shown in Figure 3.7a, the number of air routes with an average of less than three return flights per week has fallen sharply since 1990, while the number of air routes with an average of at least three return flights per week has remained relatively stable.

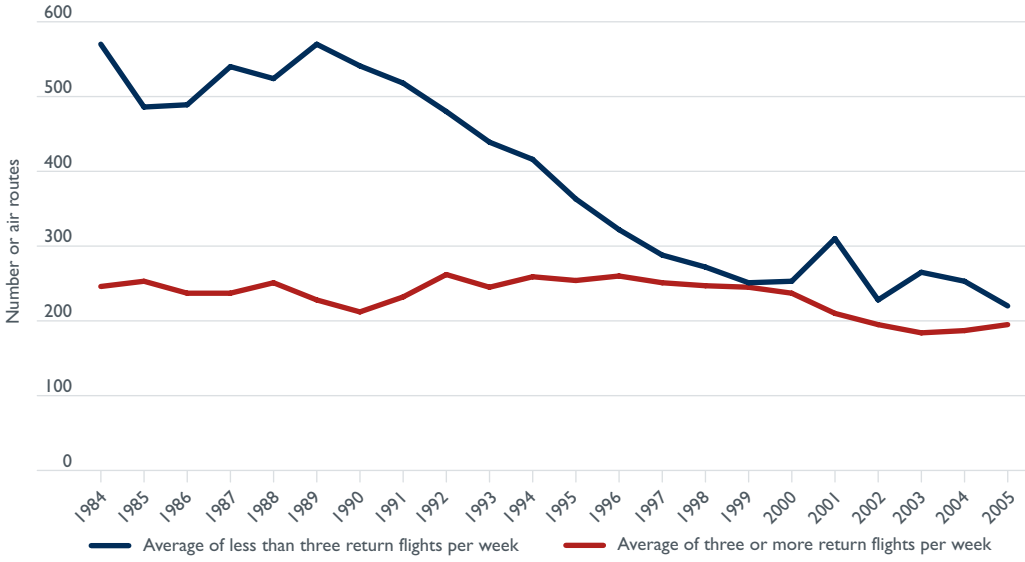
In Figure 3.7b, air routes were further disaggregated according to the following frequency groups:

- once a week or less
- two to four return flights per week
- five to six return flights a week
- one to four return flights daily
- more than four return flights daily.

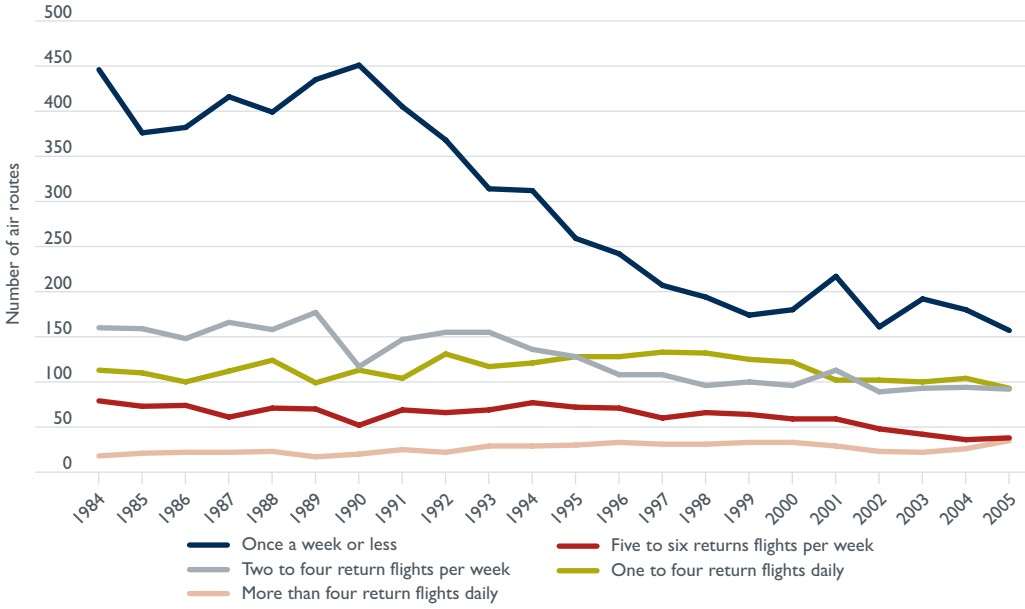
An examination of Figure 3.7b reveals that regional air routes with an average of once a week or less return services accounted for most of the decline in the number of regional air routes over the years.

Figure 3.7 Regional air routes, by flight frequency, 1984 to 2005

(a) Air routes with an average of at least three return flights a week and air routes with an average of less than three return flights a week



(b) Air routes with various frequency groups



Source: BITRE time series estimates.

3.2.2 Route density

Figure 3.8 shows the number of regional air routes by route density between 1984 and 2005. Route density is one of the key factors affecting the viability of an air route. In the following analysis, route density represents the number of revenue passengers carried on regional air routes in a year. Regional air routes were assigned into five density groups.

The number of regional air routes with fewer than 1000 passengers per year has continued to decline over the past 22 years. However, these routes continued to constitute more than 50 per cent of all regional air routes. This trend corresponds with the number of regional air routes with one, or less than one, return services per week in Figure 3.7b.

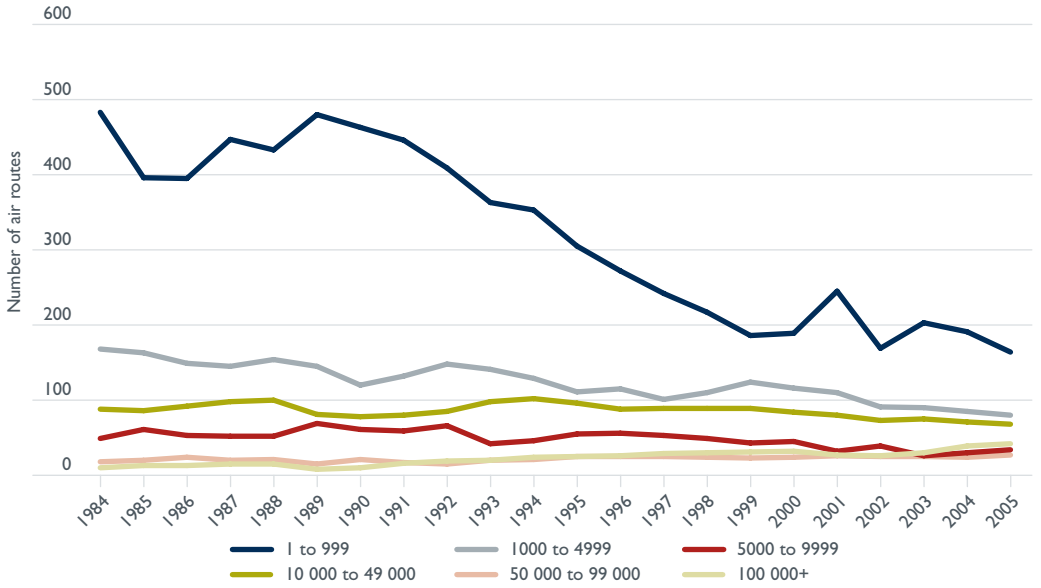
Conversely, the number of regional air routes with route density between 10 000 to 50 000 revenue passengers a year has increased slightly in recent years. A more noticeable increase is observed in the number of air routes with more than 100 000 revenue passengers a year.

The trend revealed in Figure 3.8 suggests that the regional air routes with fewer than 1000 passengers a year are the most likely to be unsustainable. However, given that there are many remote communities with relatively dispersed and sparse population in Australia, the number of these low density routes remains higher than other routes with higher density.

See Appendix B, Table B2, for detailed statistics on route density by airline serving on regional air routes over the past 22 years.

See Appendix B, Table B3, provides detailed statistics on route density by each regional air route over the past 22 years.

Figure 3.8 Regional air routes, by route density, 1984 to 2005



Source: BITRE time series estimates.

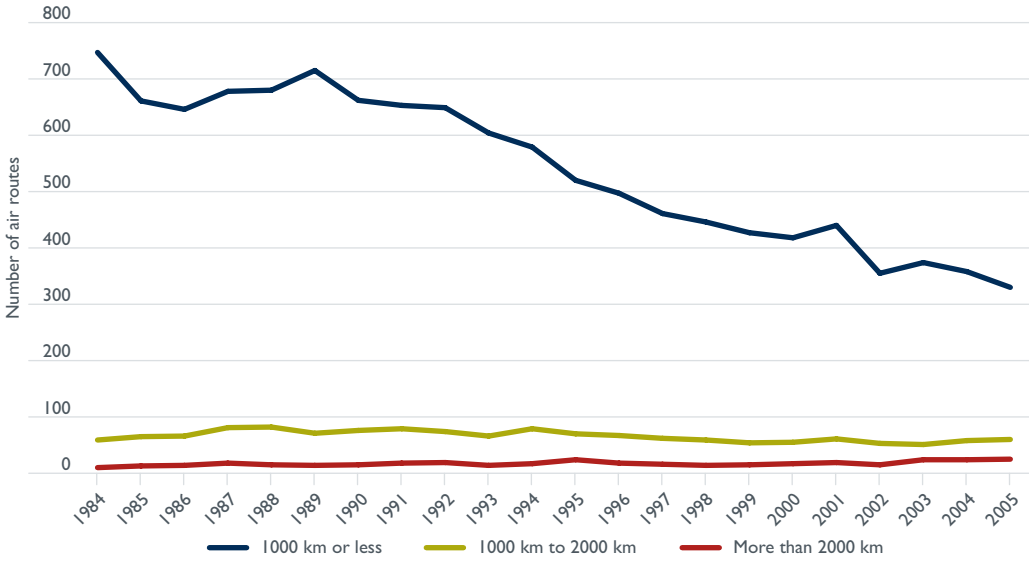
3.2.3 Route distance

Figure 3.9a shows that the number of regional air routes with 1000 km or less has continued to fall over the years. However, this type of air route continues to dominate the regional market. More than 80 per cent of the regional air routes were less than 1000 km. The number of regional air routes with distances within 1000 km to 2000 km has been relatively stable over time. The number of regional air routes of more than 2000 km has also been fairly stable between 1984 and 2005. There was a gradual increase in the number of air routes of this distance group after 2002.

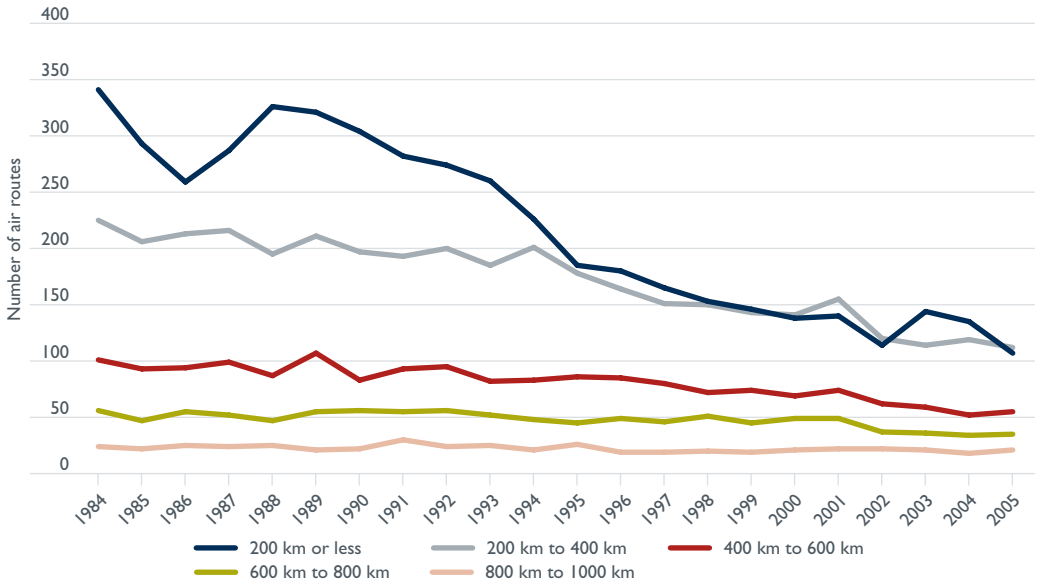
Figure 3.9b shows a further breakdown of regional air routes with 1000 km or less. It reveals that the number of routes with 200 km or less and those within 200 km to 400 km have continued to fall over the years (Figure 3.9b). The reduction in the number of regional air routes in these distance groups might be due to alternatives such as improved land transport access. It could also be as a result of 'passenger leakage', where passengers from small communities choose to drive to the nearest larger airport for more choices, better schedules, or lower fares.

Figure 3.9 Regional air routes, by route distance, 1984 to 2005

(a) Number of air routes by route distance



(b) Number of air routes by route distance up to 1000 km

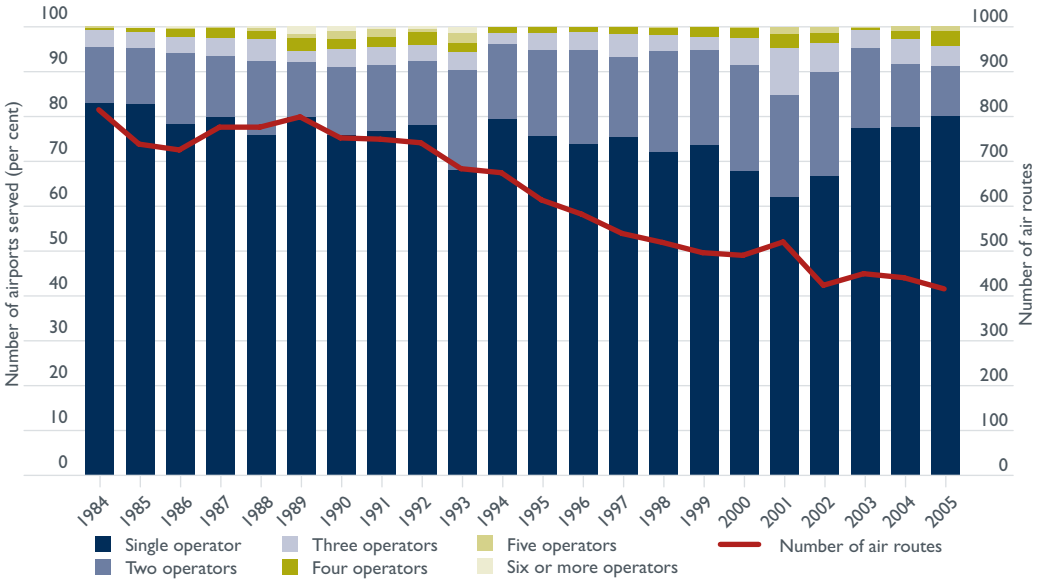


Source: BITRE time series estimates.

3.2.4 *Airlines serving regional air routes*

As shown in Figure 3.10, regional air routes have been predominantly served by a single operator. Prior to deregulation in 1990, regional air routes served by single operators accounted for around 80 per cent of all regional air routes. That proportion fell to nearly 60 per cent in 2001 and returned to around 80 per cent in recent years.

Figure 3.10 Regional air routes served, by number of airlines, 1984 to 2005



Source: BITRE time series estimates.

See Appendix B, TableB.1, for detailed information on the number air routes served by each airline for the past 22 years.

Table 3.2 highlights the number of operators on regional air routes by six route density groups in five yearly intervals over the past 22 years. Overall, single operator and multiple operators appeared across all route density groups.

Table 3.2 Number of airlines served on regional air routes, by route density, in 1985, 1990, 1995, 2000 and 2005

Route density	*No. of routes by number of airlines*					*No. of routes*
1985	*1 airline routes*	*2 airline routes*	*3 airline routes*	*4 airline routes*	*5+ airline routes*	
1–999	374	21	1			396
1000–4999	142	20	1			163
5000–9999	46	12	3			61
10 000–49 999	46	24	10	5	1	86
50 000–99 999	4	9	4	1	2	20
100 000+		6	6	1		13
1990	*1 airline routes*	*2 airline routes*	*3 airline routes*	*4 airline routes*	*5+ airline routes*	*No. of routes*
1–999	407	51	2	2	1	463
1000–4999	81	23	10	3	3	120
5000–9999	39	17	3	1	1	61
10 000–49 999	42	19	9	7	1	78
50 000–99 999	2	3	6	3	7	21
100 000+	1			2	7	10
1995	*1 airline routes*	*2 airline routes*	*3 airline routes*	*4 airline routes*	*5+ airline routes*	*No. of routes*
1–999	272	27	3	1		303
1000–4 999	101	8	2			111
5000–9999	38	13	3			54
10 000–49 999	48	38	8	2		96
50 000–99 999	3	17	3	2		25
100 000+	4	13	4	4		25
2000	*1 airline routes*	*2 airline routes*	*3 airline routes*	*4 airline routes*	*5+ airline routes*	*No. of routes*
1–999	165	18	6			189
1000–4999	84	28	3		1	116
5000–9999	30	12	3			45
10 000–49 999	51	27	5	1		84
50 000–99 999	2	12	8	2		24
100 000+		19	5	7		31
2005	*1 airline routes*	*2 airline routes*	*3 airline routes*	*4 airline routes*	*5+ airline routes*	*No. of routes*
1–999	155	7	2			164
1000–4999	74	4	2			80
5000–9999	29	2	2	1		34
10 000–49 999	53	11	3		1	68
50 000–99 999	13	9	3	2		27
100 000+	8	14	6	11	3	42

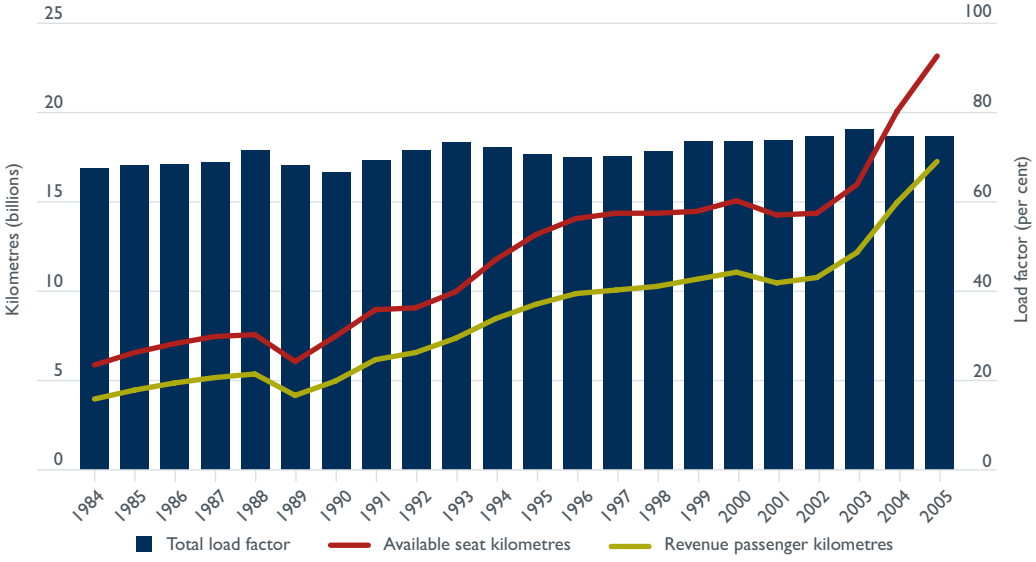
Source: BITRE time series estimates.

Most regional air routes were low density routes and served by a single operator. As shown, the number of regional air routes serving less than 1000 passengers has been the highest relative to other route density groups at each point in time. However, the actual number of these regional air routes has continued to fall over time. Most of these routes were predominantly served by a single operator. In contrast, the number of regional air routes serving more than 100 000 passengers has increased slowly over time. As expected, such high density routes have been able to attract and support two or more operators. One noticeable change in 2005 was that there were more sole operators in the density group of 50 000–99 999 than before.

3.3 Air service demand and capacity on regional routes

Figure 3.11 shows total air service demand measured in Revenue Passenger Kilometres (RPKs) and total air service capacity measured in Available Seat Kilometres (ASKs) on all regional air routes. In 1984, the RPKs on all regional air routes totalled 3.8 billion and the ASKs totalled 5.7 billion. In 2005, the RPKs on all regional air routes totalled 17.1 billion and the ASKs on all regional air routes totalled 23 billion. The total load factor has been fluctuated at around 70 per cent on all regional air routes for the past 22 years.

Figure 3.11 Revenue passenger kilometres and available seat kilometres, 1984 to 2005[8]

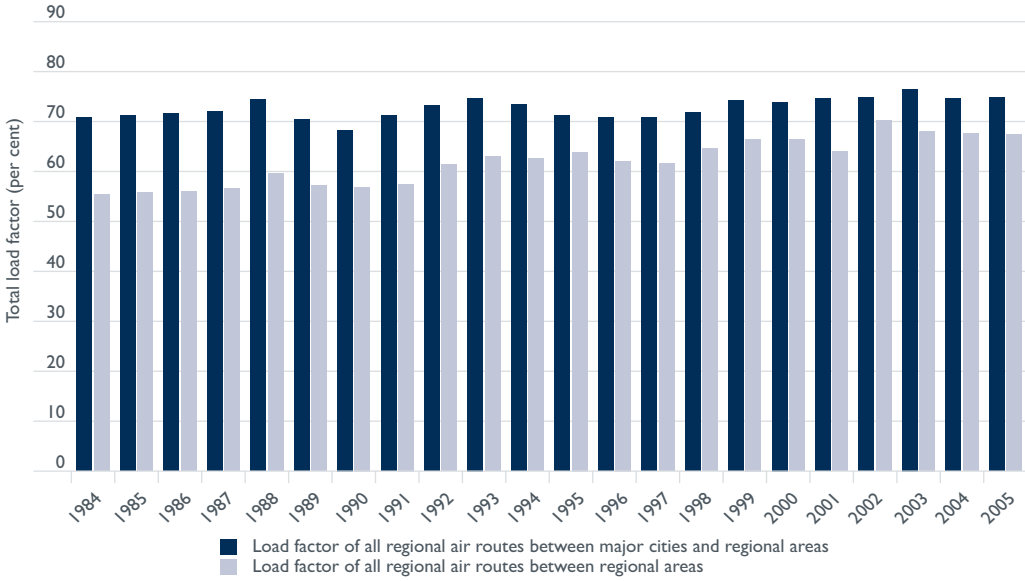


Source: BITRE time series estimates.

Over the past 22 years, the total load factor of regional air routes between major cities and regional areas has consistently stayed above 70 per cent, while the total load factor of all regional air routes between regional areas increased from less than 60 per cent in the period before 1991 to close to 70 per cent in recent years (Figure 3.12).

8. Total load factor was derived from dividing total RPKs by total ASKs of all regional air routes in a year. Average load factor was derived from taking the average of all load factors on regional air routes in a year.

Figure 3.12 Load factor, by summarised ASGC Remoteness Classification, 1984 to 2005



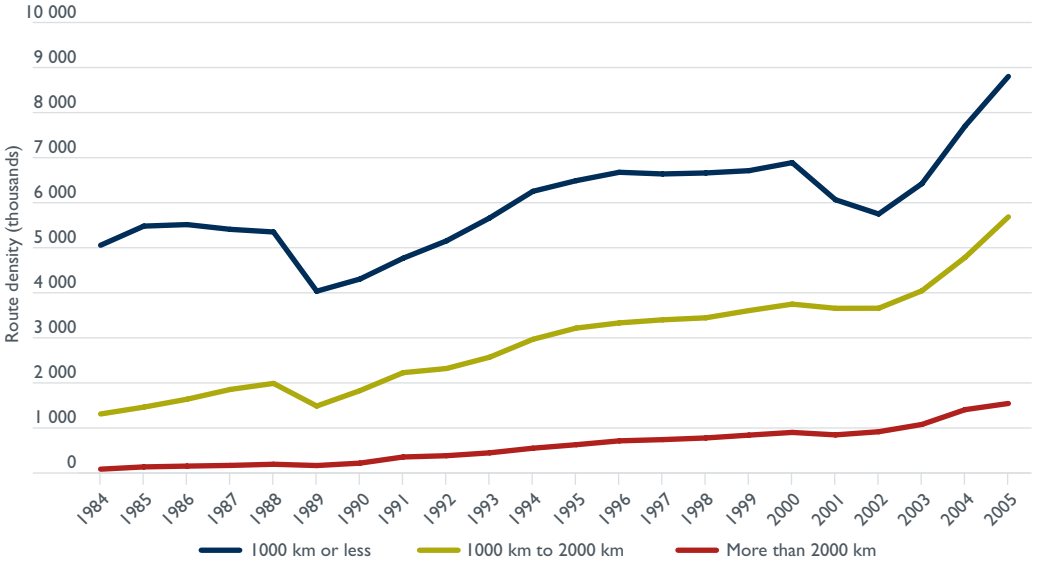
Source: BITRE time series estimates.

Figure 3.13a shows that the number of revenue passengers on regional air routes for each distance group displays an increasing trend. It is worth noting that, in Figure 3.9a, the number of regional air routes with distances less than 1000 km decreased dramatically over time. However, Figure 3.13a shows that the number of revenue passengers travelling on air routes of less than 1000 km has increased significantly, especially in recent years. Similarly, while Figure 3.9a shows that the number of regional air routes with distances between 1000 km and 2000 km has been fairly stable, the number of revenue passengers travelling on regional air routes in the same distance group displays an obvious increasing trend (Figure 3.13a). The gradual increase in the number of revenue passengers on regional air routes of more than 2000 km in the past few years (Figure 3.13a) is consistent with the gradual increase in the number of such regional air routes shown in Figure 3.9a.

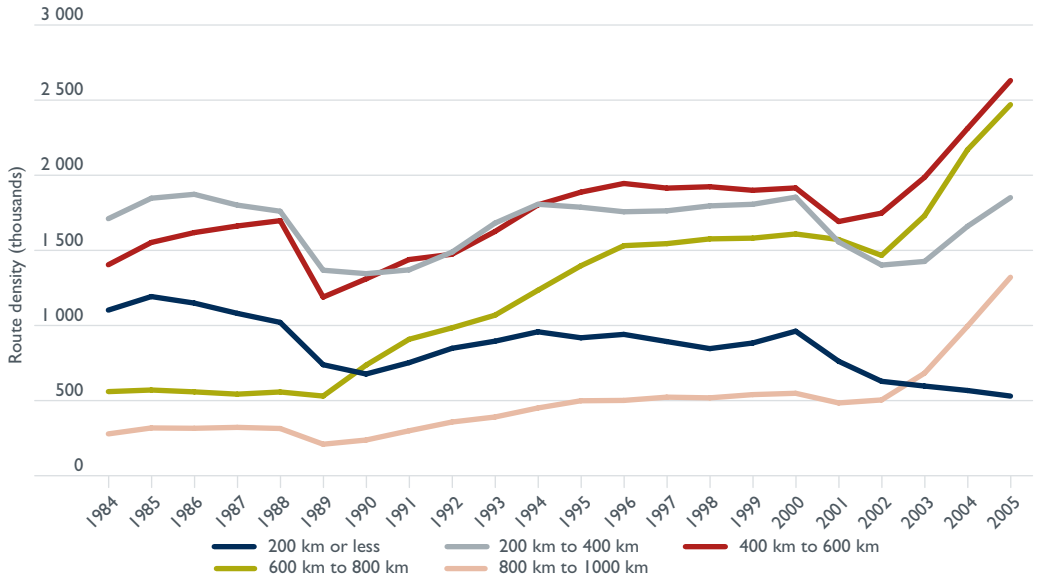
Figure 3.13b shows a further breakdown of route density within the distance group of 1000 km or less. In contrast to all other distance groups, the figure reveals that the number of revenue passengers for the distance group of less than 200 km has declined over time. The fall is consistent with the reduction in the number of such air routes over time (Figure 3.9b). All other distance groups show a steady increasing trend in passenger numbers, particularly after 2002. The number of revenue passengers on routes within 200 km to 400 km has also increased over time (Figure 3.13b) despite the number of such regional air routes declining over time (Figure 3.9b). Similarly, the numbers of revenue passengers in both distance groups of 400 km to 600 km and 600 km to 800 km (Figure 3.13b) have increased over time. However, the numbers of regional air routes in these distance groups have declined over the past 22 years (Figure 3.9b). While the number of regional air routes with distances within 800 km to 1000 km has been fairly stable (Figure 3.9b), the number of revenue passengers of such routes has also increased greatly since 2002.

Figure 3.13 Route density, by route distance, 1984 to 2005

(a) Number of revenue passengers by route distance



(b) Route density by route distance up to 1000 km

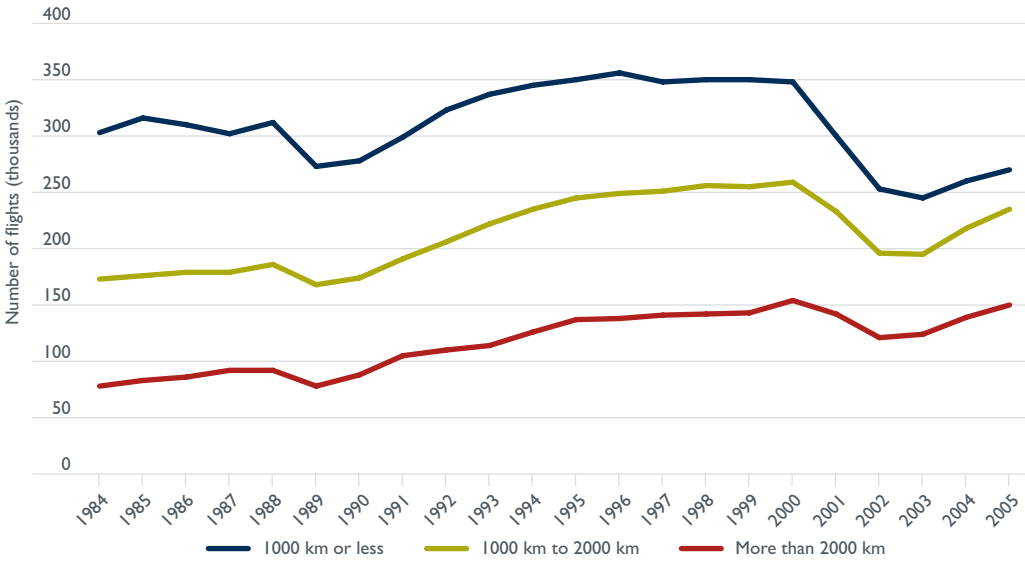


Source: BITRE time series estimates.

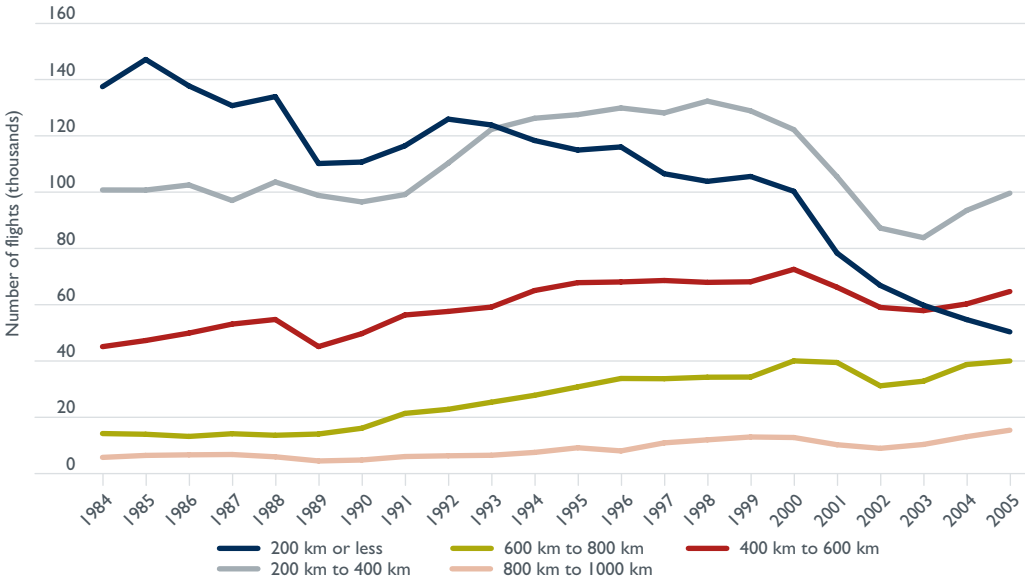
In terms of number of flights by route distance, trends displayed in Figure 3.14a and 3.14b correspond with the trend in route density by route distance in Figure 3.13a and 3.13b. The number of flights increased or decreased in accordance with the number of revenue passengers.

Figure 3.14 Regional scheduled flights, by route distance, 1984 to 2005

(a) Number of flights by route distance



(b) Number of flights by distance up to 1000 km



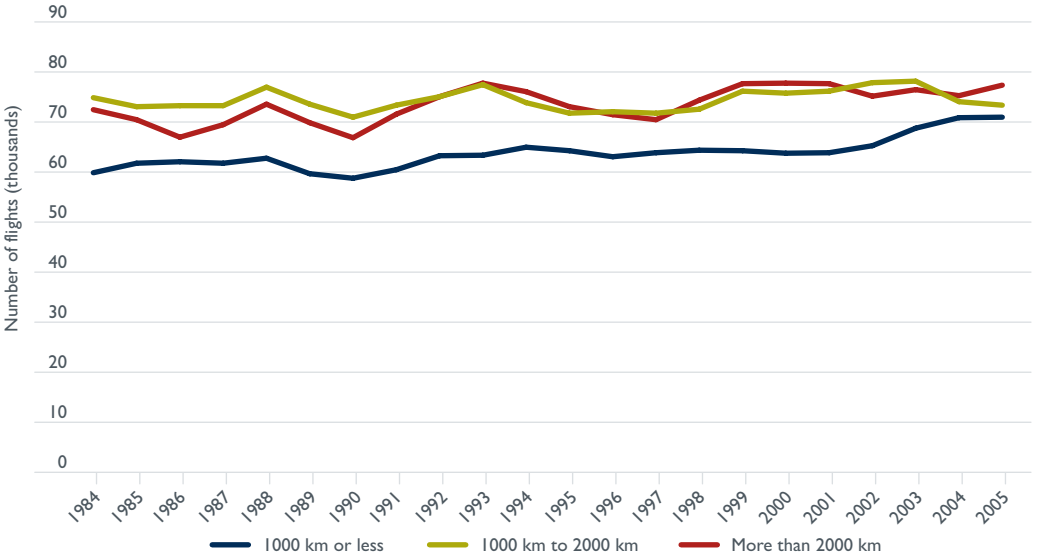
Source: BITRE time series estimates.

From Figure 3.15a, it is apparent that the load factor was the lowest for regional air routes of less than 1000 km at any point in time between 1984 and 2005. The total load factor for both regional air routes in the distance group of 1000 km to 2000 km and the distance group of more than 2000 km have generally stayed above 70 per cent for the past 22 years.

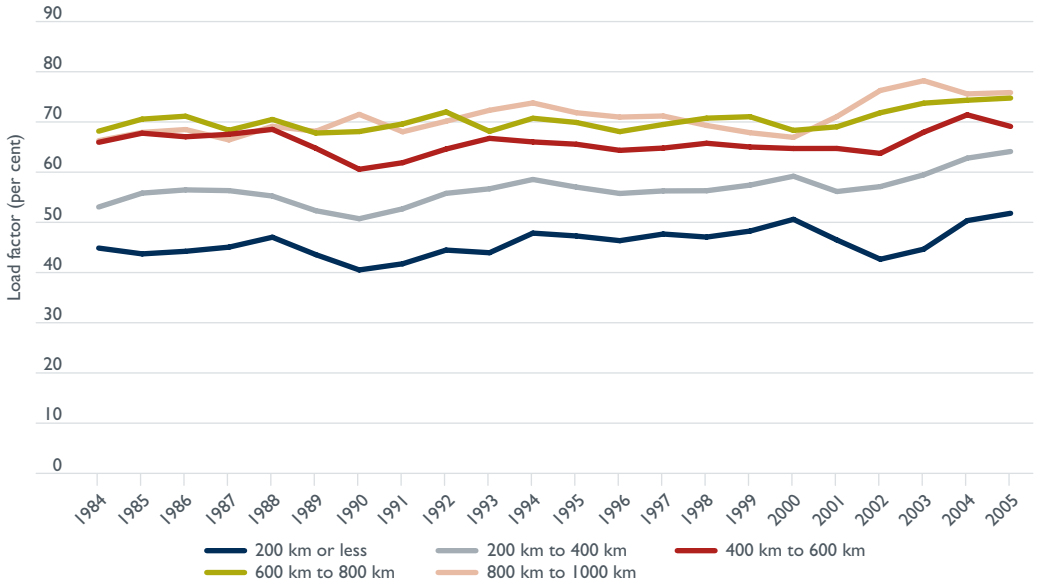
As shown in Figure 3.15b, the low average load factor for regional air routes of 200 km or less and regional air routes within 200 km to 400 km weighed down the total load factor for all regional air routes with 1000 km or less. The load factor for regional air routes within 200 km were below 50 per cent most of the time, while the load factor for air routes within 200 km to 400 km were below 60 per cent most of time. Load factors for the remaining distance groups were mostly around 70 per cent or above over the 22 years.

Figure 3.15 Load factor, by route distance, 1984 to 2005

(a) Total load factor by route distance



(b) Total load factor by route distance up to 1000 km



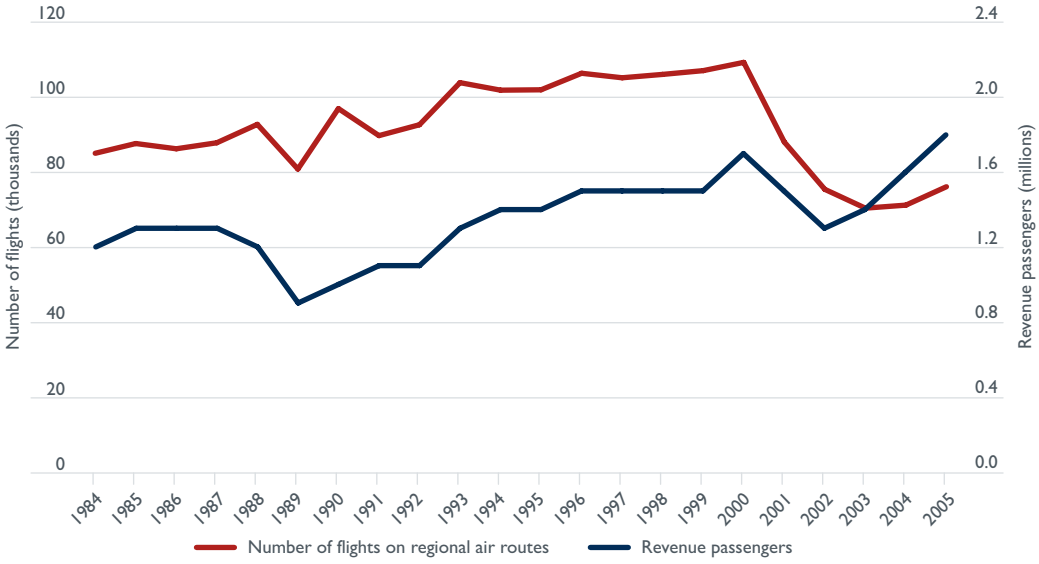
Source: BITRE time series estimates.

3.4 Intrastate air services on regional routes

New South Wales

Overall, the number of revenue passengers on regional air routes within New South Wales increased from 1.2 million in 1984 to 1.8 million in 2005, an average annual growth rate of 2 per cent over the past 22 years. On the other hand, the number of flights decreased from 85 000 in 1984 to 76 000 in 2005 (Figure 3.16).

Figure 3.16 Intrastate air services on regional air routes in New South Wales, 1984 to 1985



Source: BITRE time series estimates.

Figure 3.17 presents the number of air routes and airlines on regional air routes within New South Wales. Overall, there has been a clear decline over the years in the number of air routes in the state. The number of regional air routes served within the state fell from 133 in 1984 to 70 in 2005. There were 15 airlines in 1984 and 11 airlines in 2005. Major airlines serving regional routes within the state in 2005 were Regional Express, Eastern Australia Airlines and Air Link (Table 3.3).

In 2002, Regional Express commenced services between Sydney and Lismore, Wagga Wagga, Ballina, Dubbo, Orange, Griffith, Merimbula, Moruya, Narrandera, Bathurst, Parkes and Broken Hill. Most of these air routes carried less than 20 000 passengers a year and were formerly served by Hazelton Airlines. Regional Express started to operate most of these air routes with under 10 000 passengers in 2002. By the end of 2005, the number of revenue passengers carried by Regional Express on most of these air routes increased significantly. Passenger numbers on regional air routes between Sydney and Lismore, Wagga Wagga and Ballina increased to more than 60 000 a year. Apart from operating between Sydney and other regional airports, Regional Express also plays an important role in offering services between regional airports in New South Wales. It provides air services on routes between Merimbula–Moruya, Broken Hill–Dubbo, Griffith–Narrandera, Albury–Wagga Wagga, Bathurst–Parkes–Orange, Lismore–Ballina, and Dubbo–Parkes–Bathurst–Orange. Both Regional Express and

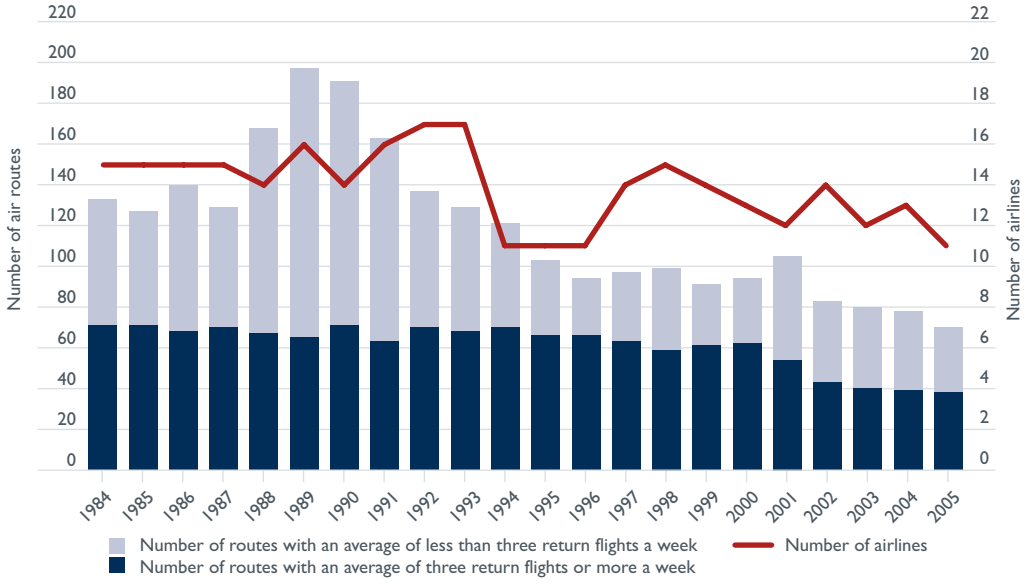
Virgin Blue started serving Sydney–Coffs Harbour in 2002. However, out-competed by Virgin Blue, Regional Express ceased services on Sydney–Coffs Harbour route in 2004. In the same year, Virgin Blue started services on Sydney–Ballina route. In 2004, Regional Express also added air services between Sydney and Armidale, Cooma and West Wyalong. Overall, Regional Express provided air services on 20 regional air routes and carried 35 per cent of all intrastate revenue passengers in New South Wales in 2005.

Eastern Australia Airlines has been serving regional New South Wales for the past 22 years. In 2005, it served 29 regional air routes and carried 41 per cent of all intrastate revenue passengers in New South Wales. Air Link started to serve regional air routes in New South Wales from 1991. It served 12 regional air routes in 2005.

Regional routes where intrastate air services discontinued between 2004 and 2005 were Sydney to Grafton and Kempsey, Lismore–Port Macquarie, Coffs Harbour–Grafton, Kempsey–Taree, Griffith–Orange, Dubbo–Orange, Coonamble–Lightning Ridge, Coffs Harbour–Lismore, Williamtown–Ballina, Narrandera–Wagga Wagga, Armidale–Harbour, Armidale–Moree, Moree–Williamtown, Ballina–Tamworth, Gunnedah–Taree, and Grafton–Ballina.

Major regional air routes within New South Wales in 2005 were Sydney–Coffs Harbour, Sydney–Albury, Sydney–Dubbo, Sydney–Wagga Wagga, Sydney–Ballina and Sydney–Tamworth. All carried more than 100 000 revenue passengers a year.

Figure 3.17 Number of regional air routes and airlines in New South Wales, 1984 to 2005



Source: BITRE time series estimates.

Table 3.3 Airlines serving regional air routes in New South Wales, 1984 to 2005

No. of air routes served in New South Wales

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Regional Express																			35	31	30	30
Eastern Australia Airlines	33	31	29	25	31	38	51	33	31	30	24	16	15	20	17	17	29	29	31	37	32	29
Air Link Pty Ltd								10	14	14	14	16	14	15	13	15	14	15	11	13	12	12
Big Sky Express																					9	6
Virgin Blue																			1	1	2	2
Sunshine Express																				1	2	2
Qantas Airways												1				1	1	1	1	1	1	2
Jetstar																					1	2
Norfolk Jet Express Pty Ltd														1	1	1	1	1	1	1	1	1
Aeropelican Air Services						6													2		1	1
Alliance Airlines																			1	1		1
MacAir																			1	7	7	
Sunstate Airlines						2									2	1	3	3	2	2	1	
Redpath Regional																				1	1	
Horizon Airlines																1	1		4	9		
Hazelton Airlines Pty Ltd	12	12	20	22	80	107	105	93	33	40	41	39	34	36	36	32	34	48	40			
Impulse Qantaslink																		39	37			
Kendell Airlines	2	3	4	2	3	4	2	2	4	2	2	4	9	7	6	7	5	5	3			
Impulse Airlines	3	4	2	3	3	6	8	30	34	20	14	16	16	11	17	16	17	23				
Country Connection Airlines								3	3	6	8	7	5	5	5	5	5	5				
Ansett Airlines of Australia	1	1	2	2	3	1		1	3	8	11	10	5	4	3	2	2	1				
Flight West Airlines																1	1	1				
Singleton-Yanda Airlines	6	6	6	6	6	10	6	12	12	19	17	9	9	6	7	6	6					
Tasman Australia Airlines															7	5						
Tamair									2	2	4	5	5	4	4							
Kentialink Australia														4	4							
Eastland Air														3	3							
Air Facilities													1	1	1							
Pacific Interline													2	2								
Peninsula Air Services										1	7	1										
Link Airways										2	1											
Air New South Wales	35	35	49	41	43	39	22	19	20	10												
Monarch Air									9	10												
Western Nsw Airlines Pty Ltd	1	1	1	1	1	1	1	2	3	3												
East West Airlines	32	35	33	30	33	10	7	4	3	2												
Southern Pacific Regional Airlines								1	3	2												
Aquatic Air	4	4	2	2	4	2	1	1	1	1												
Australian Airlines								1	1													
Coast to Coast Airlines									1													
Southern Airlines								2														
Macknight Airlines	4	1	1	1	1	3	4	1														
Norfolk Island Airlines Pty Ltd	3	4	4	4	4	5	14															
Countryair Pty Ltd							5															
Queensland Pacific Airlines							1															
Southern Australia Airlines Pty Ltd							1															
Crane Airlines	1	1	1	2	2	1																
Royal Australian Air Force						1																
Airlines of Western Australia		1	1	1	1																	
Easter Airways	1	1	1	1																		
Avdev Airlines of Australia	18																					

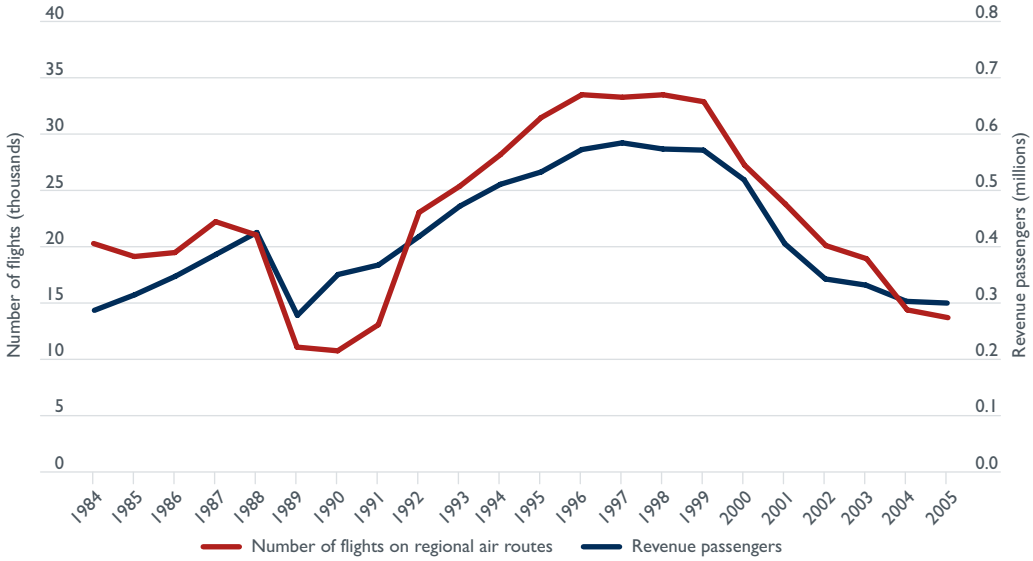
Source: BITRE time series estimates.

Northern Territory

The number of revenue passengers on regional air routes in the Northern Territory was 283 992 in 1984. In Figure 3.18, the trend displays a slow increase in passenger numbers between 1984 and 1988 before declining in 1989 and 1990. The trend started to move upwards after 1990 and peaked at a total of 583 341 revenue passengers in 1997. However, the number of revenue passengers on regional air routes in the Territory began to fall after 1997. By 2005, the number of revenue passengers fell to 296 982, which was only marginally higher than the number of revenue passengers in the Territory 22 years ago. The declining trend of the number of revenue passenger in the Territory, particularly in recent years, is in contrast to the increasing trends in most other states and territories.

The trend of the number of flights in the Territory closely followed the trend of the number of revenue passengers (Figure 3.18).

Figure 3.18 Intrastate air services on regional air routes in the Northern Territory, 1984 to 2005



Source: BITRE time series estimates.

There were 10 airlines serving intrastate regional air routes in the Northern Territory in 1984. The number of airlines fell to seven in 2005.

The number of regional air routes within the Territory also reduced from 75 in 1984 to 33 in 2005 (Figure 3.19). In particular, the number of routes fell from 65 in 2001 to 45 in 2002. The noticeable decline was largely attributed to a significant rationalisation of regional air services by Air North. In 2001, Air North served 51 intrastate regional air routes in the Territory. Out of the 51 routes, Air North ceased to provide services on 26 routes in 2002. Some of the discontinued routes after 2001 were Croker Island–Darwin, Croker Island–South Goulburn Island, Croker Island–Elcho Island, Croker Island–Ramingining, South Goulburn Island–Maningrida, South Goulburn–Milingimbi, South Goulburn–Snake Bay, Katherine-Tindal–Hooker Creek, Katherine-Tindal–Numbulwar and Katherine-Tindall–Borroloola, Groote Eylandt–Lake Evella,

Groote Eylandt–Maningrida, Bathurst Island–Snake Bay, Hooker Creek–Victoria River Downs and Numbulwar–Victoria River Downs. Most of these routes were formally served by Air North.

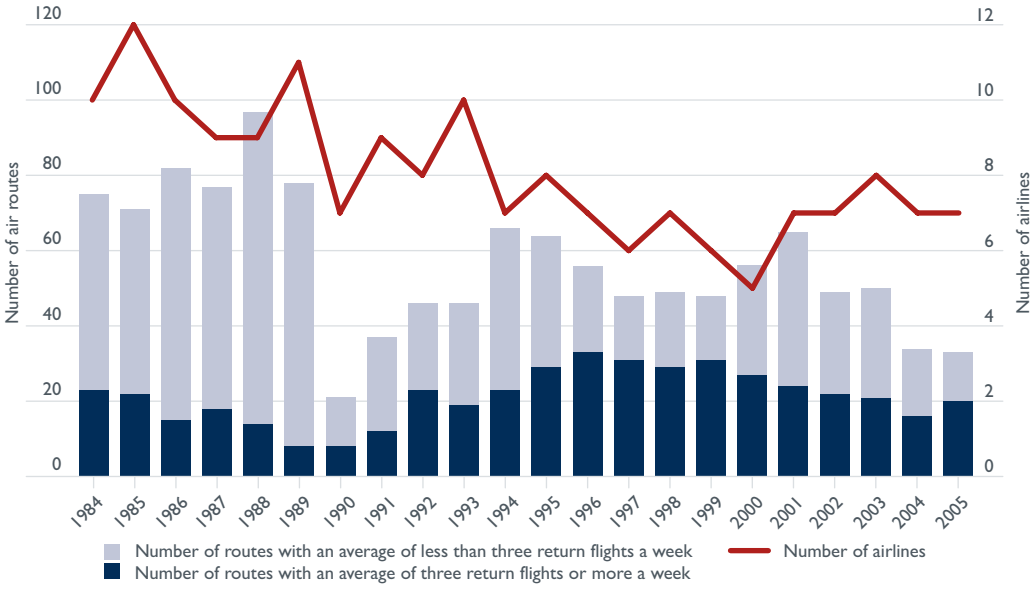
The number of regional air routes within the Northern Territory continued to decline from 50 routes in 2003 to 34 routes in 2004. The decline was again due to a further rationalisation of air services by Air North. Other airlines such as Eastland Airline, Anindilyakwa Airline and Skywest Airlines also ceased operations on some air routes within the Territory. The loss of air services during this period was on routes between Snake Bay–Darwin, Snake Bay–Garden points, Snake Bay–Croker Island, Garden Point–Darwin, Garden Point–Bathurst Island, Roper River–Katherine-Tindal, Roper River–Borroloola, Roper River–Numbulwar, Maningrida–Gove, Maningrida–Jabiru, Darwin–Milingimbi, Darwin–Lake Evella, Borroloola–Numbulwar, and Ayers Rock–Groote Eylandt.

Regional routes where intrastate air services discontinued between 2004 and 2005 were Bathurst Island–Darwin, Hooker Creek–Yuendumu and Lake Evella–Maningrida.

In 2005, major airlines providing intrastate air services in the Territory were Mission Aviation Fellowship, Air North, Aboriginal Air Services and Qantas, each serving 16, 10, 6 and 5 routes respectively (Table 3.4). Qantas carried 68 per cent of the total revenue passengers within the Territory in 2005.

Major regional air routes within the Northern Territory in 2005 were Darwin–Alice Springs and Darwin–Gove. Each carried more than 50 000 passengers a year.

Figure 3.19 Number of regional air routes and airlines in the Northern Territory, 1984 to 2005



Source: BITRE time series estimates.

Table 3.4 Airlines serving regional air routes in the Northern Territory, 1984 to 2005

	No. of airlines served in Northern Territory																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Mission Aviation Fellowship	10	10	10	10	9	7	10	12	13	11	11	11	16	14	16	15	15	13	16	18	16	16
Air North Regional										19	39	38	25	22	31	31	40	51	25	24	11	10
Aboriginal Air Services																		4	6	5	5	6
Qantas Airways										3	5	5	5	4	3	3	6	5	4	4	6	5
Vincent Aviation																						3
Australian Air Express																					1	2
National Jet Systems Pty Ltd												1	1	1	1	1	1	1	1	1	1	1
Anindilyakwa Air																		5	5	6	1	
Eastland Air																			5	5		
Skywest Airlines Pty Ltd																				2		
Ansett Airlines of Australia	2	2	4	3	3	4	3	8	8	9	10	6	6	5	5	5	6	5				
Kakadu Air															1	1						
Arnhem Air Charter Pty Ltd	4	3							9	9	9	9	10	10	6							
Executive Air											3	10	5									
Air Mount Isa											2	2										
Air North International Pty Ltd	21	14	25	34	44	31		21	25	17												
Airlines of Western Australia		1	1	1	1	1	3	5	5	7												
Skyport Airlines								5	5	4												
Australian Airlines	2	2	2	2	2	2	2	3	3	3												
Australian Airlink								2	2	2												
Airlines of Northern Australia	10	9	10	10	9	10	11	9														
East West Airlines		1	1	1	1	1	1	1														
Australian Leased						1	1															
Chartair	12	15	18		35	35																
Ansett Leased						1																
Royal Australian Air Force						1																
Tillair	24	25	35	33	22																	
Air Queensland Ltd				1																		
Arrmunda Airways Pty Ltd	6	6	6																			
Skymaster Aviation	1	1																				

Source: BITRE time series estimates.

Queensland

Figure 3.20 depicts a generally increasing trend in the number of revenue passengers and the number of flights on regional air routes within Queensland over the past 22 years. The number of revenue passengers increased from 1.9 million in 1984 to

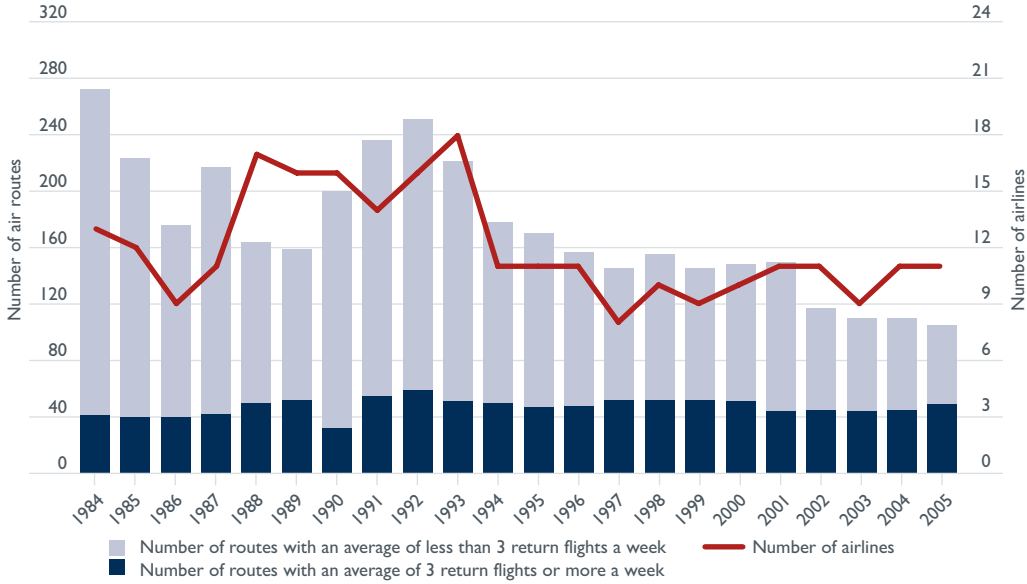
Figure 3.20 Intrastate air services on regional air routes in Queensland, 1984 to 2005

Source: BITRE time series estimates.

4.2 million in 2005, an average annual growth rate of 3.8 per cent a year over the 22 years. Flight numbers also increased from 71 000 in 1984 to 84 000 in 2005.

As in other states and territories, there has been a high turnover in airlines serving regional Queensland over the years. In terms of the number of airlines, the trend has been relatively stable in the past decade (Figure 3.21). There were 13 airlines in 1984 and 11 airlines in 2005 serving regional air routes within Queensland.

Figure 3.21 Number of regional air routes and airlines in Queensland, 1984 to 2005



Source: BITRE time series estimates.

The number of regional air routes within the state fell from 272 in 1984 to 105 in 2005. After a surge in 1993, the number of air routes served fell dramatically in 1994. It was largely due to the fall in the number of routes with an average of less than three return flights a week. In 2002, the number of air routes with an average of less than three return flights a week fell from 106 to 72. The decline was mostly due to the collapse of Ansett Airlines and Flight West. Qantas and MacAir provided some relief to the closures and changes in air services by some of these airlines. In the same year, Kendell Airlines became part of Regional Express Airlines. After 2002, Sunshine State and Virgin Blue have also progressively absorbed some of the revenue passengers on regional air routes formally served by Ansett and Kendell. Overall, the number of regional air routes with an average of less than three return services per week fell from 231 routes in 1984 to 56 routes in 2005.

Major airlines serving regional Queensland in 2005 were MacAir, Sunstate Airlines, Qantas and Jetstar, each serving 34, 34, 16 and 15 routes respectively (Table 3.5). In terms of the share of passengers carried within Queensland, Virgin Blue accounted for 31 per cent of revenue passengers in 2005, followed by Qantas (24 per cent), Sunshine State (23 per cent) and Jetstar (16 per cent).

Major regional air routes within Queensland in 2005 were Brisbane–Cairns, Brisbane–Townsville, Brisbane–Rockhampton and Brisbane–Mackay. All routes carried more than 500 000 passengers a year.

Table 3.5 Airlines serving regional air routes in Queensland, 1984 to 2005

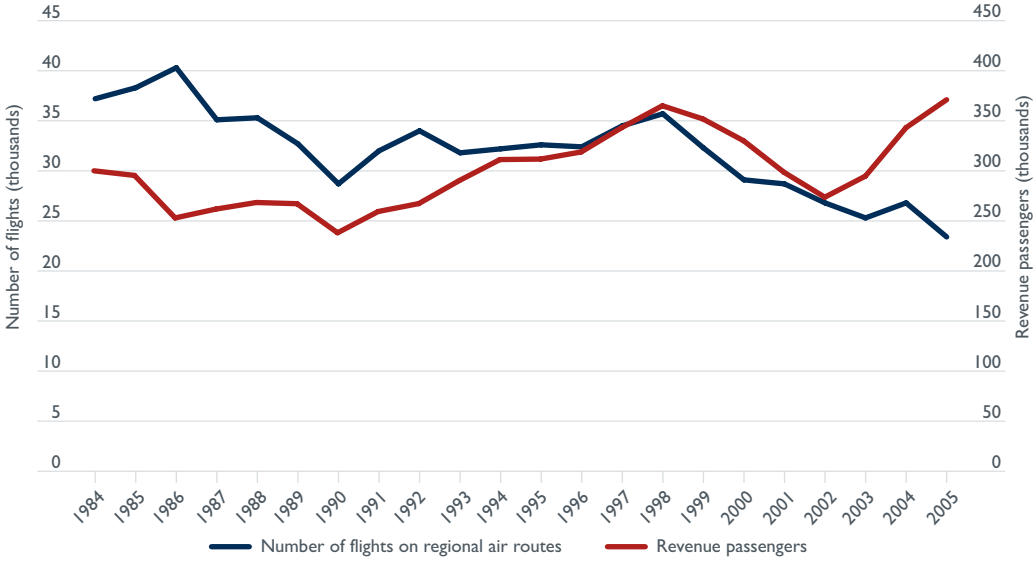
	No. of air routes served in Queensland																			
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
MacAir															4	4	20	51	40	41	34	34
Sunstate Airlines	22	21	17	43	59	67	58	21	43	66	66	61	58	55	59	47	62	55	53	39	31	34
Qantas Airways						2			1	14	16	14	15	12	15	20	17	25	28	21	17	16
Jetstar																					7	15
Airlines of South Australia																				12	20	10
Skytrans Airlines													4	6	7	8	7	7	7	7	7	8
Australian Air Express																					9	7
Sunshine Express															1	1	1	7	6	7	8	7
Virgin Blue																		4	5	5	5	6
Alliance Airlines																			7	9	5	1
Inland Pacific Air																			1	1	1	1
Impulse Qantaslink																		14	10			
Flight West Airlines								194	197	164	96	105	101	83	89	84	84	76	3			
Eastland Air								1	1	1	1	1	1	1	2	5	4	4	1			
Ansett Airlines of Australia	42	24	22	26	30	23	23	19	25	20	33	32	27	25	23	21	23	25				
Kendell Airlines																	1	3				
Transtate Airlines													13	13	15	17	17					
National Jet Systems Pty Ltd												1	1	1	1							
Sabair Airlines								1	1	4	5	6	5									
Air Swift									1	1	3	2	1									
Cape York Air												1	1									
Air Mount Isa											6	5										
Majestic Airways											3	1										
Air Cairns										11	11											
Air Maroochy Airlines										1	4											
Australian Airlines	68	56	61	58	22	23	15	17	10	19												
East West Airlines	2	2	2	7	12	20	21	16	19	11												
Australian Regional Airlines (Qld)					13	17	22	22	13	10												
Australian Airlink								6	11	9												
Air New South Wales	1		1	1	3	1	5	8	4	6												
Compass Airlines								1	3	3												
Airlines of Western Australia					1		2	3	2	3												
Southern Pacific Regional Airlines								3	3	1												
Air Midwest									1	1												
Airlines of Northern Australia					1		3	4														
Sunbird Airlines Pty Ltd		19					89															
Falcon Airlines				34	34	35	34															
Queensland Pacific Airlines					3	40	16															
Countryair Pty Ltd							10															
Australian Leased						11	8															
Ansett Leased						11	7															
Augusta Airways Pty Ltd	13	13	10	8	7	7	7															
Norfolk Island Airlines Pty Ltd		10	5			3	1															
Piccolo Airlines			12	14	8	6																
Royal Australian Air Force						4																
Foreign Airlines						1																
Sungold Airlines				16	27																	
Air Queensland Ltd	137	84	93	71	23																	
Lloyd Aviation Jet Charter Pty Ltd				6	6																	
Challenge Air Services					6																	
North Australian Air Charter					1																	
Coddair Airlines Pty Ltd	28	32																				
South Burnett Aviation	4	8																				
Air Whitsunday	2	1																				
Henebery Aviation Company	1	1																				
Queensland Outback Tourist Services	1																					
Rundle Air Service Pty Ltd	1																					

Source: BITRE time series estimates.

South Australia

Figure 3.22 depicts a generally increasing trend in the number of revenue passengers and a decreasing trend in the number of flights on regional air routes within South Australia over the past 22 years. The number of revenue passengers increased from 299 000 in 1984 to 370 000 passengers in 2005. The annual average growth rate was 1 per cent between 1984 and 2005. The number of flights, on the other hand, decreased from 37 000 in 1984 to 23 000 in 2005.

Figure 3.22 Intrastate air services on regional air routes in South Australia, 1984 to 2005

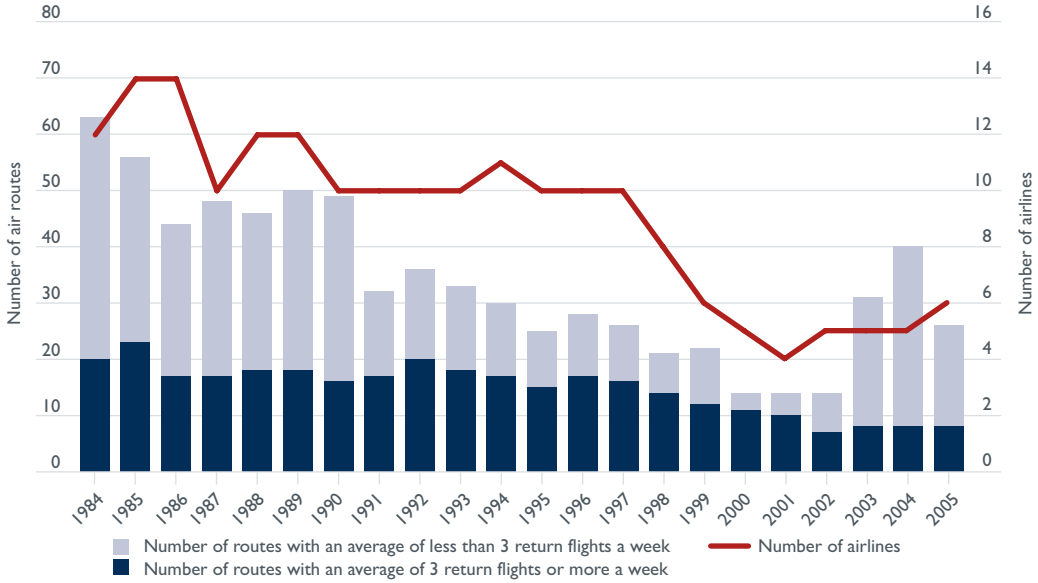


Source: BITRE time series estimates.

There were 12 airlines providing regional air services within South Australia in 1984. This number fell by half to six airlines in 2005 (Figure 3.23).

The number of regional air routes served within South Australia fell from 63 in 1984 to 26 in 2005 (Figure 3.23). A noticeable fall was after 1990 where the number of regional air routes fell from 50 routes to around 30 routes. There was another significant decline between 1999 and 2000. The number of regional air routes fell from 22 routes to 14 routes. The decline was partly due to intrastate air services provided by Southern Sky on Adelaide–Kingscote, Adelaide–Tumby Bay, Adelaide–Port Lincoln, Port Lincoln–Wudinna, Streaky Bay–Wudinna and Ceduna–Streaky Bay routes were discontinued in 2000. Towards 2000, Kendell progressively served fewer routes and concentrated mostly on medium to high density routes. The airline offered services between Adelaide and Port Lincoln, Kingscote, Olympic Dam, Mount Gambier, Whyalla, Ceduna and Coober Pedy. Regional Express took over most of these operations after the merger in 2002. In direct competition with Regional Express, O'Connor Airlines continues to provide services on Adelaide–Whyalla and Adelaide–Mount Gambier. Airlines of South Australia has also been serving the Adelaide–Port Lincoln route. It also served other thinner routes within South Australia. The number of airlines served within the state increased to 40 in 2004 and fell to 26 in 2005.

Figure 3.23 Number of regional air routes and airlines in South Australia, 1984 to 2005



Source: BITRE time series estimates.

Major airlines serving regional South Australia in 2005 were Airlines of South Australia and Regional Express, each serving 15 and 12 routes respectively (Table 3.6). Regional Express carried 72 per cent of revenue passengers on regional air routes within South Australia in 2005.

Table 3.6 Airlines serving regional air routes in South Australia, 1984 to 2005

	No. of air routes served in South Australia																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Airlines of South Australia	5	5	4												4	5	6	6	4	21	29	15
Regional Express																			11	10	12	12
O'Connors Air Services	6	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	2	2	2
Great Western Airlines																				2	2	2
Eastern Australia Airlines																						2
Emu Air Charter Pty Ltd								1	1	3	3	3	5	1	1	1	1	1	1	3	1	1
Kendell Airlines		3	14	23	19	22	24	18	18	14	13	12	12	14	10	11	8	8	7			
Whyalla Airlines							3	1	5	5	5	5	4	4	4	4	4					
Southern Sky														2	6	6						
Eyre Charter Pty Ltd	2	5	4	4	4	3	3	2	2	5	3	3	6	4	4							
Southern Australia Airlines Pty Ltd			1	1	1	1	1	1	1	1	1	1	1	1	1							
Augusta Airways Pty Ltd	22	16	15	14	13	14	13	3	3	3	3	3	3	5								
Albatross Airlines	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
Lincoln Airlines Pty Ltd				1	1	1	1	1	1	1	1	1	1	1								
SA Regional											1	1	1									
Airtransit-Air Kangaroo Is	5	5	8	8	7	7	7	9	10	5	5											
Air Central Air					2	4	2															
Lloyd Aviation Jet Charter Pty Ltd		4	4	4	4	3																
State Air Pty Ltd	8	8	7		2	2																
Chartair	3	2			1	1																
Wudinna Air Services		2	2	2																		
Opal Air Pty Ltd	18	12	6																			
Rossair Pty Ltd	6	7	3																			
Murray Valley Airlines	2	1	1																			
East West Airlines	1																					

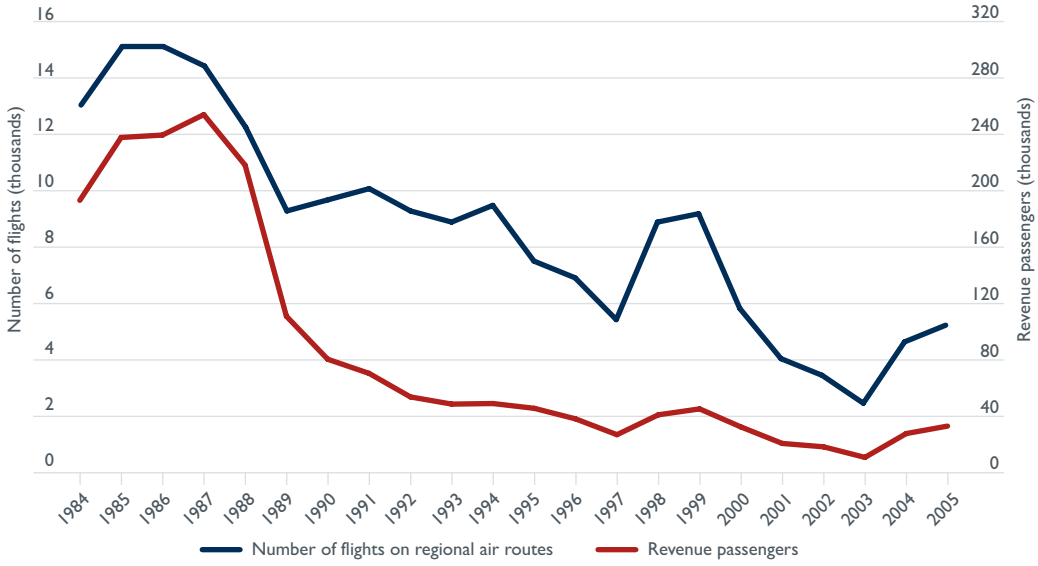
Source: BITRE time series estimates.

Major regional air routes within South Australia in 2005 were Adelaide–Port Lincoln, Adelaide–Kingscote, Adelaide–Mount Gambier and Adelaide–Whyalla.

Tasmania

As in the Northern Territory, the trend of passenger growth in Tasmania went against the national trend. Figure 3.24 depicts a generally decreasing trend in both the number of revenue passengers and the number of flights on regional air routes within Tasmania over the past 22 years. The number of revenue passengers fell from 193 000 in 1984 to 33 000 in 2005. The number of flights also decreased from 13 000 in 1984 to 5000 in 2005.

Figure 3.24 Intrastate air services on regional air routes in Tasmania, 1984 to 2005



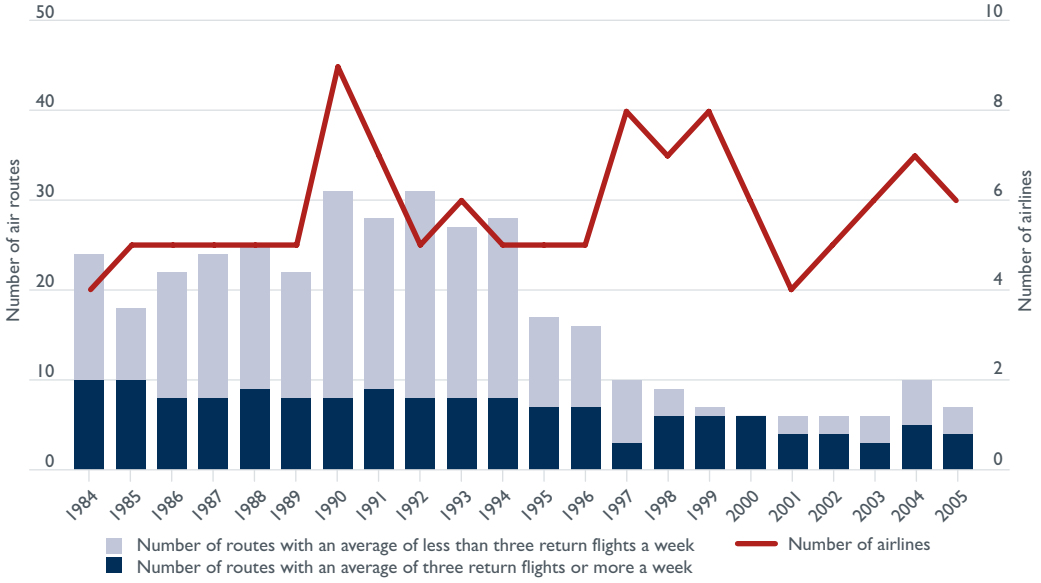
Source: BITRE time series estimates.

The number of airlines serving regional Tasmania increased from four airlines in 1984 to six airlines in 2005 (Figure 3.25). The number of intrastate regional air routes in Tasmania fell from 24 in 1984 to seven in 2005. In particular, the number of air routes fell dramatically between 1994 and 1995. The number of air routes with an average of less than three return flights a week fell from 20 to 10 routes. The decline was partly a result of rationalization of air services by Airlines of Tasmania. The airline ceased operations on regional routes between Smithton–Strahan, Smithton–Queenstown, Strahan–Burnie, Cambridge–Launceston, Devonport–Queenstown and Cambridge–Flinders Island. In addition, air services on routes such as Devenport–Strahan, Flinders Island–Saint–Helens, Hobart–Smithton, Devonport–Flinders Island and King Island–Strahan also ceased after 1994.

Major airlines serving regional Tasmania in 2005 were Tasair and Airlines of Tasmania, each serving three routes (Table 3.7). Tasair carried 53 per cent and Airline of Tasmania 43 per cent of all intrastate regional revenue passengers in Tasmania in 2005.

Major regional air routes within Tasmania in 2005 were Flinders Island–Launceston, King Island–Burnie and Devonport–Burnie. All carried less than 10 000 revenue passengers a year.

Figure 3.25 Number of regional air routes and airlines in Tasmania, 1984 to 2005



Source: BITRE time series estimates.

Table 3.7 Airlines serving regional air routes in Tasmania, 1984 to 2005

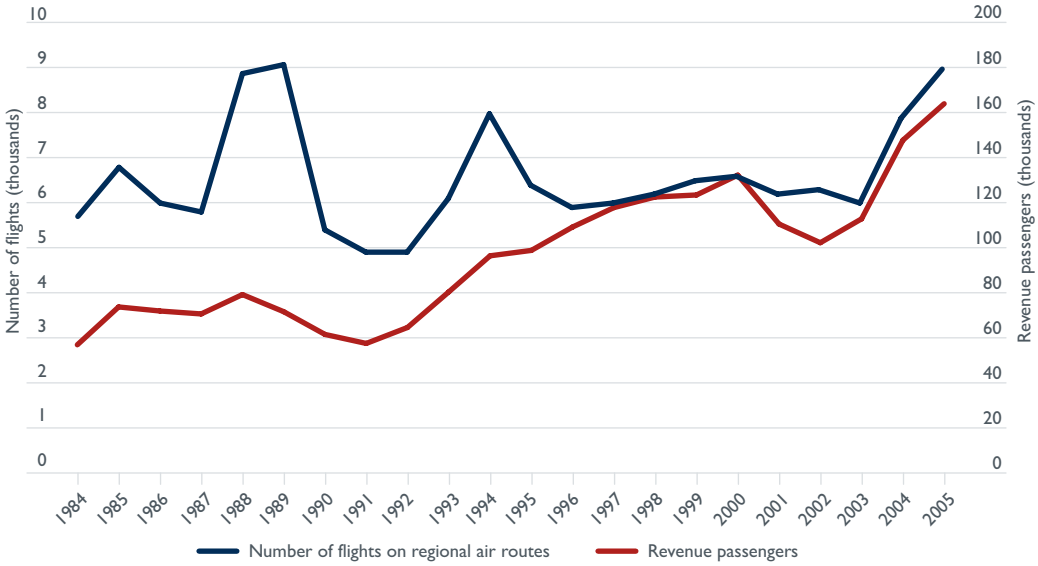
	No. of air routes served in Tasmania																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Tasair															5	4	4	4	4	4	4	3
Airlines of Tasmania																				1	3	3
Regional Express																			3	3	3	1
Eastern Australia Airlines							2													1	3	1
Australian Air Express																					1	1
Jetstar																					1	1
Qantas Airways										1	1	1	1	1		1	1	1	1	1	1	
Island Airlines Tasmania																	1	1	1	1		
Kendell Airlines							2	1	3	1	2	2		1	1	1		1	1			
Island Airlines													1	2	1	2	2					
Paravion														1	1	2	2					
Ansett Airlines of Australia	3	3	3	4	4	3	1	1	2	1	1	1	1	1	1	1	1					
Australian Air Charterers Pty Ltd														3	4	3						
Geelong Flight Centre												1	1	1	1	1						
Airlines of Tasmania Pty Ltd	24	18	22	24	25	22	31	28	31	26	27	17	15	9								
Promair Australia							1	1	1	2	1											
Australian Airlines	1	1	1	1	1	1	1	1	1	1												
East West Airlines	2	4	3	3	4	2	4	3														
Air New South Wales		1	1	2	1		1	1														
Flinders Island Airlines							1															
Royal Australian Air Force						1																

Source: BITRE time series estimates.

Victoria

Figure 3.26 depicts a generally increasing trend in both the number of revenue passengers and the number of flights on regional air routes within Victoria over the past 22 years. The number of revenue passengers increased from 56 000 in 1984 to 163 000 in 2005, an average annual growth rate of 5.2 per cent. The number of flights increased from 5730 in 1984 to 8960 in 2005.

Figure 3.26 Intrastate air services on regional air routes in Victoria, 1984 to 2005



Source: BITRE time series estimates.

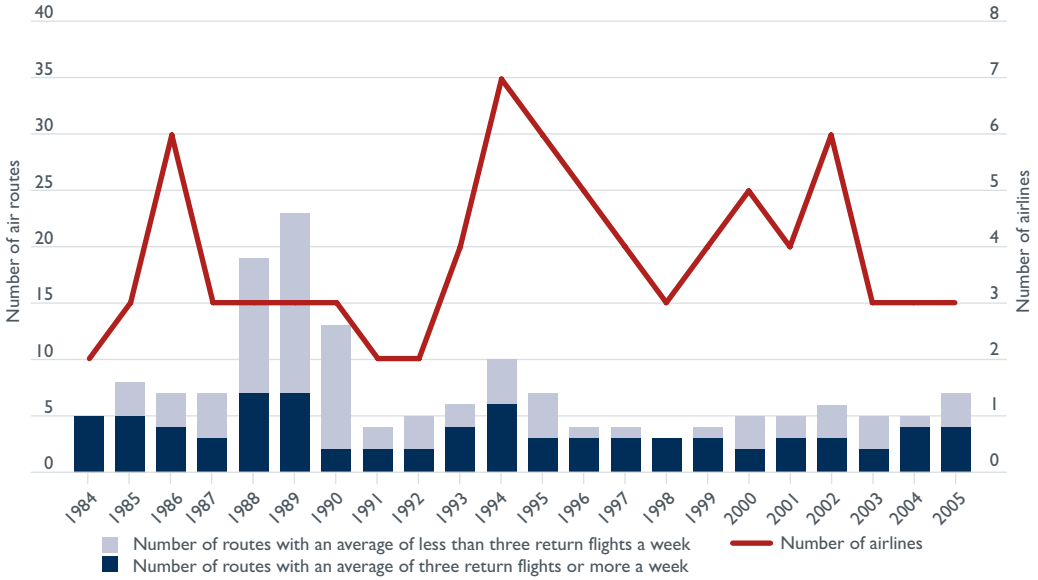
There were two airlines serving regional air routes within Victoria in 1984, as many as seven in 1994, and three airlines in 2005 (Figure 3.27).

The number of air regional routes served within Victoria was five in 1984. It peaked at 23 in 1989 and fell to seven in 2005 (Figure 3.27).

In 2005, major airlines serving regional air routes within the State were Sharp Aviation, Regional Express and Eastern Australia Airlines (Table 3.8). Eastern Australian Airlines carried 54 per cent and Regional Express carried 40 per cent of revenue passengers on regional air routes within Victoria in 2005.

Major regional air routes within Victoria in 2005 were Melbourne–Mildura and Melbourne–Portland. The Melbourne–Mildura route has been served by both Eastern Australian Airlines and Regional Express. It has been one of the fastest growing routes in Victoria. The route grew from 36 000 revenue passengers carried in 1984 to 135 000 revenue passengers in 2005.

Figure 3.27 Number of regional air routes and airlines in Victoria, 1984 to 2005



Source: BITRE time series estimates.

Table 3.8 Airlines serving regional air routes in Victoria, 1984 to 2005

	No. of air routes served in Victoria																				
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Sharp Aviation																		1	1		2	4
Regional Express																			3	3	2	2
Eastern Australia Airlines																			1	2	2	2
Island Airlines Tasmania																	1	1	1	1		
Kendell Airlines	5	7	2	4	2	2	2	4	5	4	4	2	2	2	2	2	2	2	2			
Southern Australia Airlines Pty Ltd			1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2			
Island Airlines													1	1	1	1	1					
Horizon Airlines																1	1					
Airlines of Tasmania Pty Ltd											1	1	1	1								
Hazelton Airlines Pty Ltd										1	1	1	1									
Peninsula Air Services										1	3	3										
Phillip Island Air Charter											1	1										
Gawne Airlines											1											
Flinders Island Airlines				3	17	21	11															
Regional Airlines			3																			
Pacific Aviation Pty Ltd		1	2																			
Murray Valley Airlines	1	1	1																			
Lloyd Aviation Jet Charter Pty Ltd			1																			

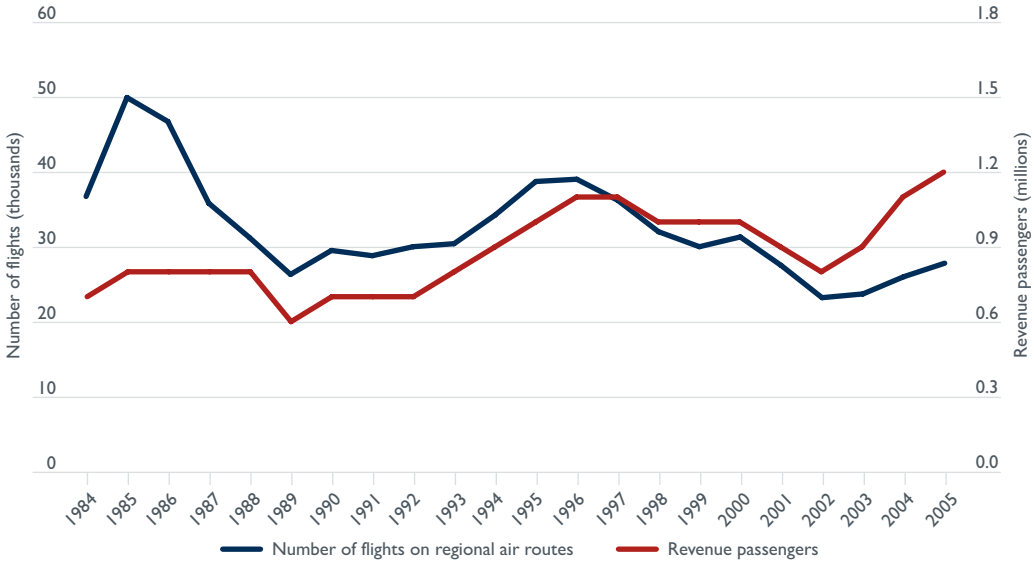
Source: BITRE time series estimates.

Western Australia

Overall, the number of revenue passengers on intrastate air routes in Western Australia increased from 0.67 million in 1984 to 1.2 million in 2005, an average annual growth rate of 2.9 per cent over the past 22 years. In particular, there was a noticeable increase in passenger numbers after 2002.

The number of flights has generally fallen over the years, from 36 000 in 1984 to 27 000 in 2005 (Figure 3.28).

Figure 3.28 Intrastate air services on regional air routes in Western Australia, 1984 to 2005



Source: BITRE time series estimates.

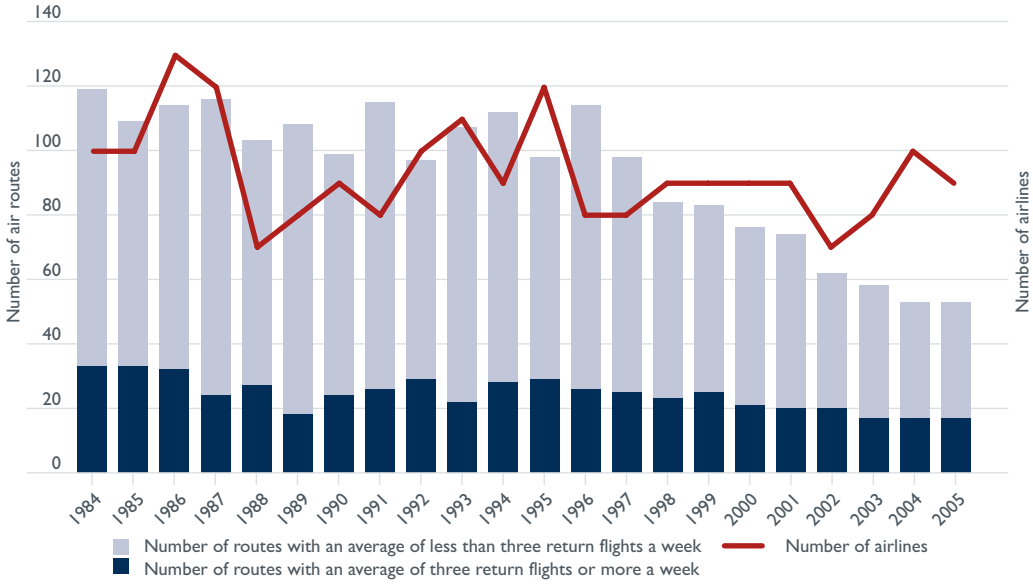
Overall, there was a clear decline over the years in the number of regional air routes served within the state, in particular, after 1996 (Figure 3.29). The number of routes reduced from 119 in 1984 to 53 in 2005. There were 10 airlines serving intrastate air routes in 1984 and nine airlines in 2005.

As in other states and territories, there has been a high turnover rate in airlines in regional Western Australia over the years (Table 3.9). Sky West is the only longstanding airline which has operated services continuously since 1984.

Major airlines serving regional Western Australia in 2005 were Sky West Airlines, Qantas Airlines and Skippers Aviation. Each served 26, 21 and 9 routes respectively. Qantas Airlines carried close to 63 per cent and Sky West carried 25 per cent of revenue passengers on regional air routes within Western Australia.

Major regional air routes within Western Australia in 2005 were Perth–Karratha, Perth–Kalgoorlie, Perth–Broome and Perth–Port Hedland. All carried more than 100 000 revenue passengers a year.

Figure 3.29 Number of regional air routes and airlines in Western Australia, 1984 to 2005



Source: BITRE time series estimates.

Table 3.9 Airlines serving regional air routes in Western Australia, 1984 to 2005

	No. of air routes served in Western Australia																					
Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Skywest Airlines Pty Ltd	31	28	34	33	32	40	39	36	28	33	43	46	61	48	36	34	33	40	35	37	24	26
Qantas Airways											5	7	11	12	11	10	9	15	19	15	20	21
Skippers Aviation																1	4	4	4	4	10	9
Golden Eagle Aviation												3	5	6	3						5	4
National Jet Systems Pty Ltd												2	2	5	3	3	3	3	3	3	4	4
Great Western Airlines																				5	2	2
Air North Regional																		1	3	2	2	1
Maroomba Airlines															5	4	4	1	1	1	1	1
Virgin Blue																					1	1
Northwest Regional																	6	8	5	4	4	
Ansett Airlines of Australia			1	1	1	1	1	1	2	48	54	42	45	36	27	25	29	23				
Western Airlines (WA)						7	4	4	4	4	4	4	4	4	4	4	4	4				
Broome Airlines																5	3					
Ord Air Charter Pty Ltd	13	16	19	15	12	13	11	23	17	15	13	12	12	12	10	13						
Rottnest Airbus				1	1	2	2	2	1	1	1	1	1	4	4							
Qwestair							1	1	1	4	4	5										
Horizon Airways										1	3	3										
King Leopold Air												1										
South-West Air												1										
Goldfields Air Services	6	6	5	5	8	9	8	7	5	5	4											
Airlines of Western Australia	55	55	52	58	56	47	46	55	50	44												
Australian Airlines	1	1	1	2					2	1												
East West Airlines	3	3	3	6	3					1												
Australian Airlink									1													
Airlines of Northern Australia							1															
Ansett Leased						1																
Avior Pty Ltd	19	8	11	10																		
Laurie Potter Airlines				10																		
Barrack Helicopters			1	1																		
Midstate Airlines			1	1																		
Chartair		1	1																			
Rottnest Airlines		1	1																			
Tillair			1																			
Fortescue Air Charter	1	1																				
Jan Beers Aviation	7																					
Paggi S Aviation	1																					

Source: BITRE time series estimates.

3.5 Summary

The key features in trends of regional air routes over the past 22 years are summarised as follows:

1. **Passenger growth on regional air routes**

   - A clear upward trend in the number of revenue passengers on regional air routes.

   Revenue passengers carried on regional air routes rose from 6.5 million in 1984 to 16 million in 2005. The average annual growth rate was 4.4 per cent for all regional air routes versus 6.2 per cent for air routes between major cities.

   Within regional aviation:

   - An upward trend in the number of revenue passengers on air routes between major cities and regional areas.
   - A downward trend in the number of revenue passengers on air routes between regional areas.

   The proportion of revenue passengers on air routes between regional areas in the overall regional market decreased from 32 per cent in 1984 to 9 per cent in 2005.

   - Growth in revenue passengers has varied across different segments of the regional aviation market over time. Below shows a summary of the average annual growth rates for different market segments of the industry between 1984 and 2005:
     - High density regional routes: 7.9 per cent

       These routes are primarily between major cities and major tourist destinations and are often operated by major airlines using high capacity aircraft.
     - Other regional routes: 2.5 per cent
       - Major cities to regional areas: 4.2 per cent (excluding high density regional routes)
       - Regional areas to regional areas: –1.5 per cent

   These contrasting trends between passenger growth on major cities–regional and regional–regional routes are particularly marked over recent years. Similarly, high density regional routes have also grown more strongly since 2000.

   Between 2000 and 2005, passenger numbers on air routes between regional areas had a negative annual growth rate of –6.2 per cent. In contrast, the average annual growth rate of revenue passengers on air routes between major cities and regional areas (including high density regional routes) was 8.9 per cent. Over the same period the average annual growth rate on high density regional routes alone was 12.1 per cent.

2. **Number of regional air routes**

   - A clear downward trend in the number of regional air routes over time.

The number of regional air routes fell from 816 routes in 1984 to 415 routes in 2005, mostly due to declines in air routes between regional areas. Albeit a declining proportion over time, the number of air routes between regional areas has consistently constituted more than 50 per cent of all regional air routes.

Overall, it is observed that many air routes between regional areas were rationalised over the years.

3. **Distribution of regional air routes in 2005**

   - Flight frequency: 50 per cent of regional air routes provided an average of less than three return flights per week.
   - Route density: 40 per cent of regional air routes had less than 1000 revenue passengers per annum.
   - Route distance:
     - 80 per cent of regional air routes had distances of 1000 km or less. Of all regional air routes, 26 per cent had distances 200 km or less, 27 per cent had distances within 200 km and 400 km, 13 per cent had distances within 400 km and 600 km and 8 per cent had distances within 600 km and 800 km.
     - Regional air routes of 200 km or less show the steepest decline in number over the years.
     - While passenger numbers travelled on regional air routes in distance groups greater than 200 km has increased over the years, passenger numbers travelled on regional air routes in distance group of 200 km or less has declined.
     - In the last few years of the study period, passenger numbers travelled on regional air routes within 600 km to 800 km has increased significantly. The number of revenue passengers who travelled on these routes exceeded the number of passengers who travelled on regional air routes within 200 km to 400 km.
   - Number of operators: 80 per cent of regional air routes in regional Australia were served by single operators.

4. **Characteristics of regional air routes that experienced the greatest reduction in number over the years.**

   - flight frequency: once a week or less
   - route density: less than 1000 revenue passengers a year
   - route distance: within 200 km.

5. **Load factor for regional air routes**

   - Load factors for air routes between major cities and regional areas have consistently stayed above 70 per cent over the years.
   - Load factors for air routes between regional areas increased from below 60 per cent in the period before 1991 to around 70 per cent in recent years.

- In 2005, the load factor was around 51 per cent for regional air routes of 200 km or less and 64 per cent for regional air routes within 200 km to 400 km.

6. **Highlights of trends of intrastate air routes and air services**

- With the exception of the Northern Territory and Tasmania, all other states and territories generally exhibit an upward trend in the number of revenue passengers.

Chapter 4

Access to regional air services

bitre

Chapter 4 Access to regional air services

4.1 Introduction

Many urban clusters across Australia are small in size and separated by vast distances. Given the sparse and dispersed settlement pattern of the population, one of the frequently raised issues has been whether people living in small communities and rural areas have reasonable access to air services. A fundamental approach to a better understanding of this issue is to conduct a geospatial analysis using quantitative geographical data and cross-sectional regional aviation data. In this chapter, the analysis has been presented visually to convey important perspectives on changes in access to regional air services. The results also broadly show the magnitude of the issue.

This chapter:

- examines changes in geographic coverage of regional airports, interstate and intrastate regional air routes and services between 2000 and 2005
- estimates the number of urban centres/localities (UC/Ls) and population in Australia located within and beyond the assumed access distance to regular scheduled air services.

4.2 Changes in the provision of regional air services

4.2.1 Access to regional airports

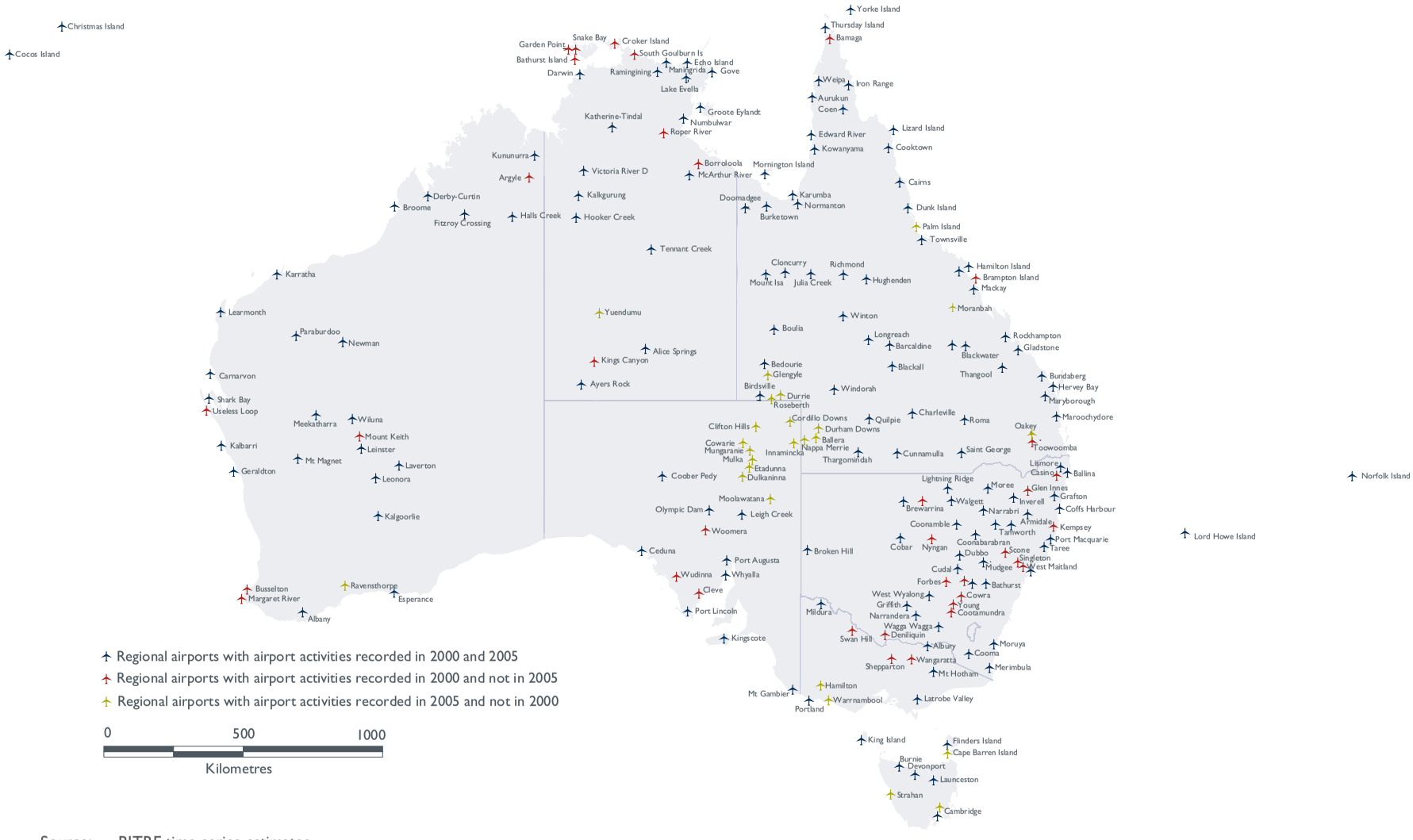
As mentioned in Chapters 2 and 3, the impact of Ansett's collapse and the terrorist attack in the United States in 2001 and 2002 was clearly observed in the regional revenue passenger trends. Rebounding from a low point in 2002, passenger numbers on regional air routes have grown beyond levels in the pre-Ansett period. However, as presented in Chapter 2 (Figure 2.2), the number of regional airports with regular scheduled air services was down to 157 in 2002 before increasing to 174 in 2003 and 2004. In 2005, there were 170 regional airports served by airlines.

How has the distribution of regional airports evolved since 2001?

Figure 4.1 shows differences in the distribution of regional airports with regular scheduled services between 2000 and 2005. There were 182 regional airports served by airlines in 2000. In the period 2000 to 2005:

- 145 regional airports recorded airport activities in both 2000 and 2005
- 37 regional airports recorded airport activities in 2000 and not in 2005 (Table 4.1)
- 25 regional airports recorded airport activities in 2005 but not in 2000 (Table 4.2).

Figure 4.1 Changes in distribution of regional airports between 2000 and 2005, Australia



Source: BITRE time series estimates.

Table 4.1 List of regional airports where provision of scheduled air services ceased between 2000 and 2005

Regional airports/state					
NSW	*NT*	*QLD*	*SA*	*VIC*	*WA*
Brewarrina	Bathurst Island	Bamaga	Cleve	Shepparton	Argyle
Casino	Borroloola	Brampton Island	Woomera	Swan Hill	Busselton
Cootamundra	Croker Island	Toowoomba	Wudinna	Wangaratta	Margaret River
Cowra	Garden Point				Mount Keith
Cudal	Kings Canyon				Shark Bay
Deniliquin	Roper River				
Forbes	Snake Bay				
Glen Innes	South Goulburn Island				
Kempsey					
Nyngan					
Scone					
Singleton					
West Maitland					
Young					

Source: BITRE time series estimates.

In New South Wales, there were 14 regional airports where regular scheduled air services ceased between 2000 and 2005 (Table 4.1). The following airlines used to serve these regional airports in 2000: Air Link (Brewarrina and Nyngan), Country Connection Airlines (Cootamundra, Cowra, Forbes and Young), Hazelton (Cudal), Horizon (Deniliquin), Impulse (Glen Innes and Kemsey), Singleton-Yanda Airlines (Scone, Singleton and West Maitland).

In the Northern Territory, eight regional airports had regular scheduled air services ceased between 2000 and 2005. Most were regional airports located in islands. Air North used to serve all of the eight regional airports in 2000.

In Queensland, three regional airports ceased regular scheduled air services between 2000 and 2005. The following airlines used to serve these regional airports in 2000: Flight West Airlines (Bamaga and Toowoomba) and Transtate Airlines (Brampton Island).

In South Australia, both Whyalla Airlines (Cleve and Wudinna) and Airlines of South Australia (Woomera) ceased providing air services at these three regional airports between 2000 and 2005.

In Victoria, there were three regional airports where regular scheduled air services ceased between 2000 and 2005. The following airlines used to serve these regional airports in 2000: Shepparton Airlines (Shepparton) and Horizon Airlines (Shepparton, Swan Hill and Wangaratta).

Between 2001 and 2005, Skippers stopped serving at Busselton and Margaret River in Western Australia. Over the same period of time, Skywest ceased providing air services to Mount Keith and Shark Bay. Ansett Airlines used to serve Argyle in 2000. At the end of 2002, Skywest Airlines secured a three year charter contract with Rio Tinto

to provide air services for Argyle Diamonds. The charter services to Argyle replaced the regular scheduled air services by Skywest in 2002 to 2003.

Most of these regional airports where regular scheduled air services were discontinued had less than 2000 passenger movements a year.

Table 4.2 lists the regional airports where regular scheduled air services commenced after 2000.

Table 4.2 List of regional airports where provision of scheduled air services commenced between 2000 and 2005

Regional airports/state					
NT	*QLD*	*SA*	*TAS*	*VIC*	*WA*
Yuendumu	Ballera	Clifton Hills	Cambridge	Hamilton	Ravensthorpe
	Durham Downs	Cordillo Downs	Cape Barren Island	Warrnambool	
	Durrie	Cowarie	Strahan		
	Glengyle	Dulkaninna			
	Moranbah	Etadunna			
	Oakey	Innamincka			
	Palm Island	Moolawatana			
	Roseberth	Mulka			
		Mungaranie			
		Nappa Merrie			

Source: BITRE time series estimates.

In the Northern Territory, Aboriginal Air Services commenced serving Yuendumu in 2001.

In Queensland, Airlines of South Australia commenced serving to Ballera, Durham Downs, Durrie, Glengly and Roseberth in 2003. All of these regional airports had passenger movements of less than 200 passengers a year. MacAir commenced serving Moranbah in 2002 and Oakey in 2004. Inland Pacific Air commenced serving Palm Island in 2002 and carried nearly 30 000 passengers a year to and from the island.

In South Australia, passenger movements of less than 250 passengers a year were recorded in six regional airports after 2000. All of these regional airports have been served by Airlines of South Australia. It is worth noting that passenger movement statistics collected from Airlines of South Australia may represent the commencement dates of data collection rather than commencement dates of air services at these airports.

In Tasmania, Airlines of Tasmania commenced serving Cambridge, Cape Barren Island and Strahan. All of these regional airports recorded less than 400 passenger movements a year.

In Victoria, Sharp Aviation commenced serving Hamilton and Warrnambool in 2004. In 2005, the number of passenger movements recorded at Hamilton was close to 4000 and at Warrnambool, around 8500.

In Western Australia, National Jet Systems commenced serving Ravensthorpe in 2004. The number of passenger movements recorded was approximately 6000 in 2005.

4.2.2 Interstate air services on regional routes

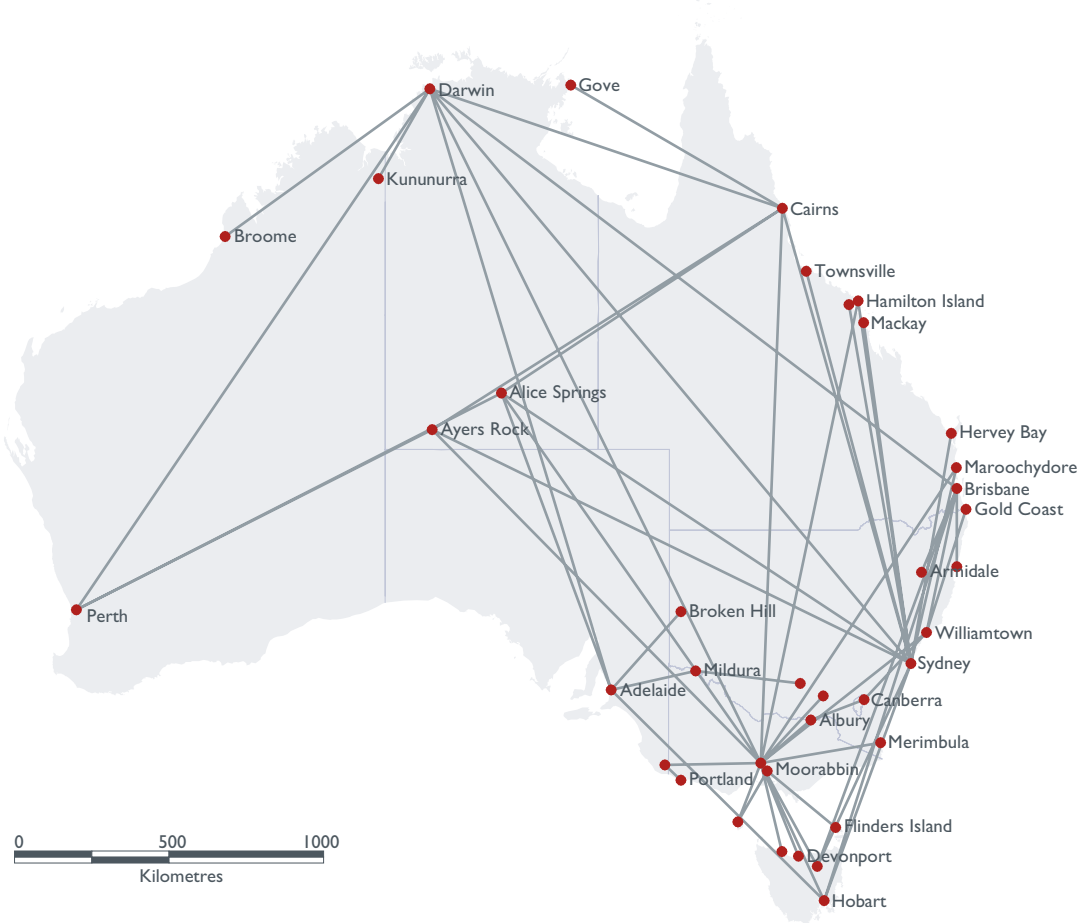
Figure 4.2a and 4.2b shows the network of interstate air services on regional routes in 2005. Overall, the number of regional air routes increased from 91 routes in 2000 to 113 routes in 2005.

The number of regional air routes with an average of at least three return flights a week increased from 50 routes in 2000 to 55 routes in 2005. As expected, such regional routes were mostly radiating out from airports at major cities (Figure 4.2a). These air routes usually carried between 50 000 to 500 000 revenue passengers a year. High density regional routes such as Hobart–Melbourne, Cairns–Sydney and Launceston–Melbourne carried more than half a million revenue passengers in 2005.

Regional air routes with an average of less than three return flights a week increased from 41 routes in 2000 to 58 routes in 2005. Most of these routes radiated out from airports at major cities or large regional airports to other regional airports (Figure 4.2b). More than half of these air routes carried less than a thousand revenue passengers in 2005.

Figure 4.2 Interstate air services on regional routes in 2005, Australia

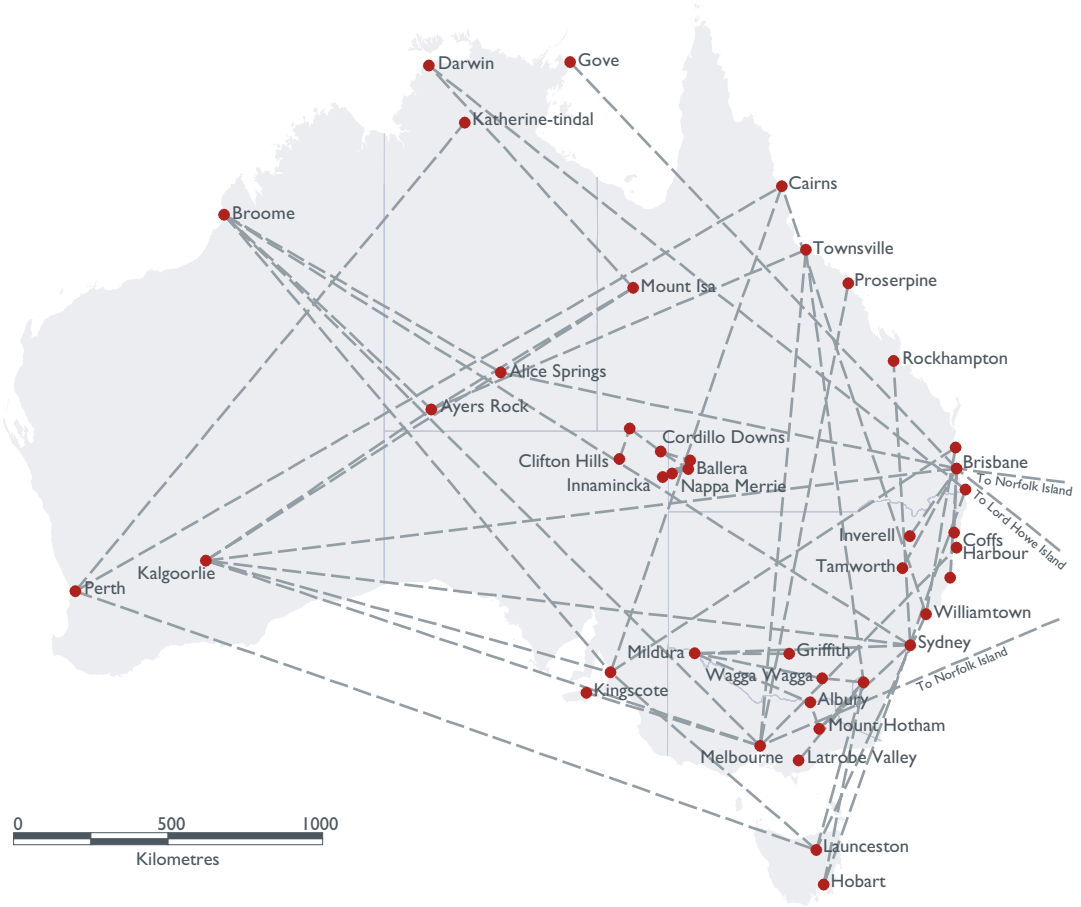
(a) Regional air routes with an average of at least three return flights a week



Source: BITRE time series estimates.

Figure 4.2 Interstate air services on regional routes in 2005, Australia (continued)

(b) Regional air routes with an average of less than three return flights a week



Source: BITRE time series estimates.

Figures 4.3, 4.4 and 4.5 show changes in interstate air services on regional air routes between 2000 and 2005.

Figure 4.3 shows all regional air routes with recorded passenger movements in both 2000 and 2005. The level of air services on 10 routes has changed between 2000 and 2005. Air services on six routes increased from an average of less than three return flights a week to an average of at least three return flights a week.

These routes were:

- Melbourne–Alice Springs
- Hobart–Brisbane
- Darwin–Cairns
- Moorabbin–Flinders Island
- Melbourne–Hamilton Island
- Townsville–Sydney.

Figure 4.3 Changes in air services between 2000 and 2005 on regional routes in Australia

Note: Figure 4.3 shows changes in interstate air services on regional routes with recorded revenue passengers in both 2000 and 2005 only.
Source: BITRE time series estimates.

Air services on the other four routes had each decreased from an average of at least three return flights a week to an average of less than three return flights a week.

These routes were:

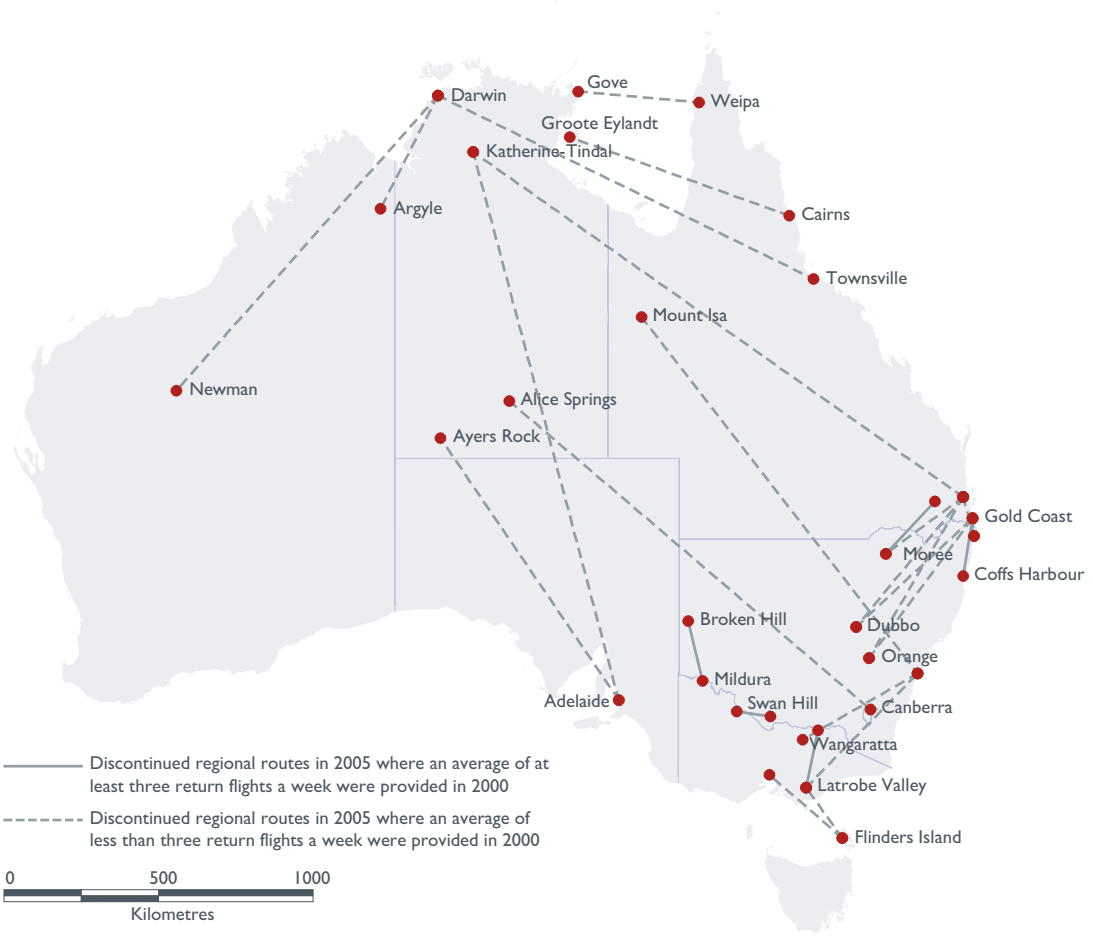
- Kalgoorlie–Adelaide
- Broome–Alice Springs
- Norfolk Island–Brisbane
- Sydney–Mildura.

Figure 4.4 shows 26 regional routes where interstate air services ceased between 2001 and 2005. Of these, there were five routes, each with an average of at least three return flights a week in 2000.

These routes were:

- Latrobe Valley–Albury (Formerly served by Hazelton Airlines)
- Mildura–Broken Hill (Formerly served by Horizon Airlines)
- Gold Coast–Coffs Harbour (Formerly served by Sunstate Airlines)
- Swan Hill–Deniliquin (Formerly served by Horizon Airlines)
- Toowoomba–Moree (Formerly served by Eastland Air).

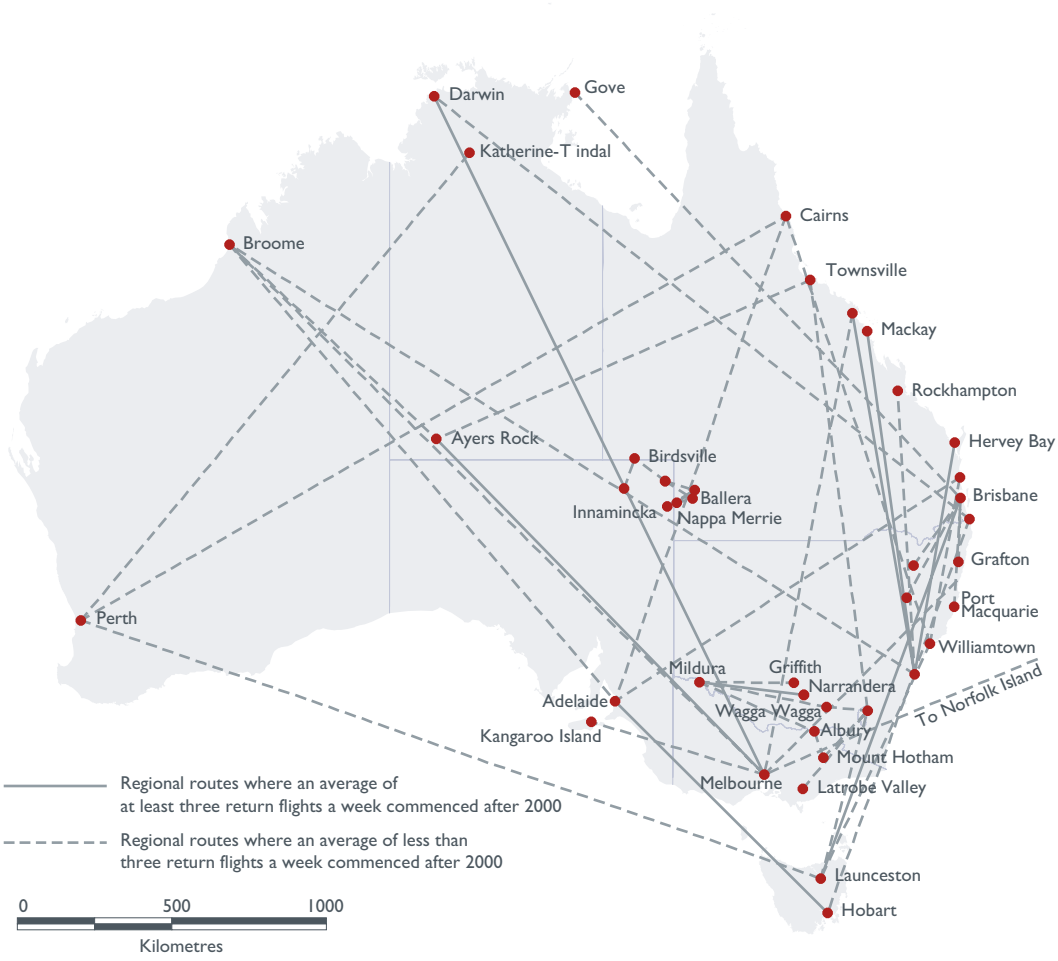
Figure 4.4 Regional routes where interstate air services ceased between 2000 and 2005



Source: BITRE time series estimates.

Figure 4.5 shows that interstate air services commenced on 49 regional routes between 2001 and 2005. Of these, there were 41 routes, each with an average of less than three return flights a week. Each of the remaining eight routes had an average of at least three return flights a week.

Figure 4.5 Regional routes where interstate air services commenced between 2000 and 2005



Source: BITRE time series estimates.

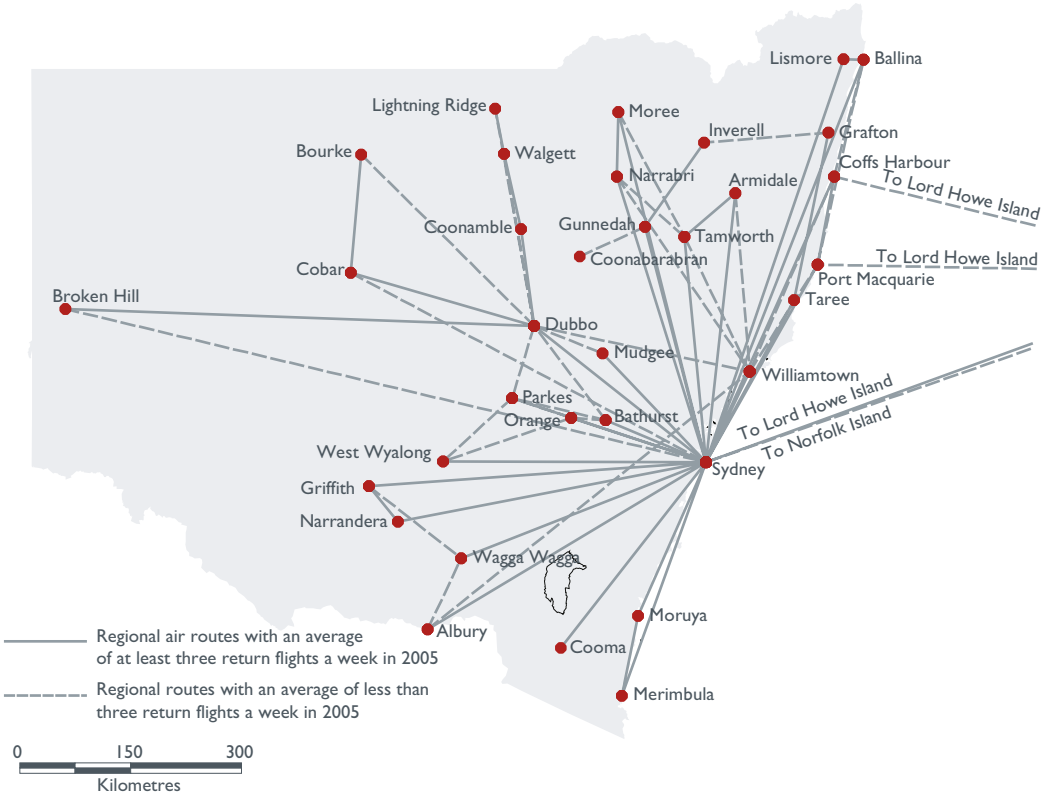
Again, most of these routes radiated out from airports at major cities or larger regional airports. As shown in Figure 4.5, air services commenced or resumed on many air routes from Perth and Broome to regional airports in other states between 2000 and 2005. Commencement of air services after 2000 were observed on regional air routes between Mildura and Albury, Griffith, Narrandera and Wagga Wagga.

4.2.3 Intrastate air services on regional routes

New South Wales

Figure 4.6 shows the intrastate air services on regional routes in New South Wales. There were 70 intrastate routes in 2005. Of these, there were 38 routes, each with an average of at least three return flights a week. Each of the remaining 32 routes had an average of less than three return flights a week. By comparison, there were 94 routes in 2000. Of these, there were 62 routes, each with an average of at least three return flights a week and 32 routes, each with an average of less than three return flights a week.

Figure 4.6 Intrastate air services on regional routes in New South Wales, 2005



Source: BITRE time series estimates.

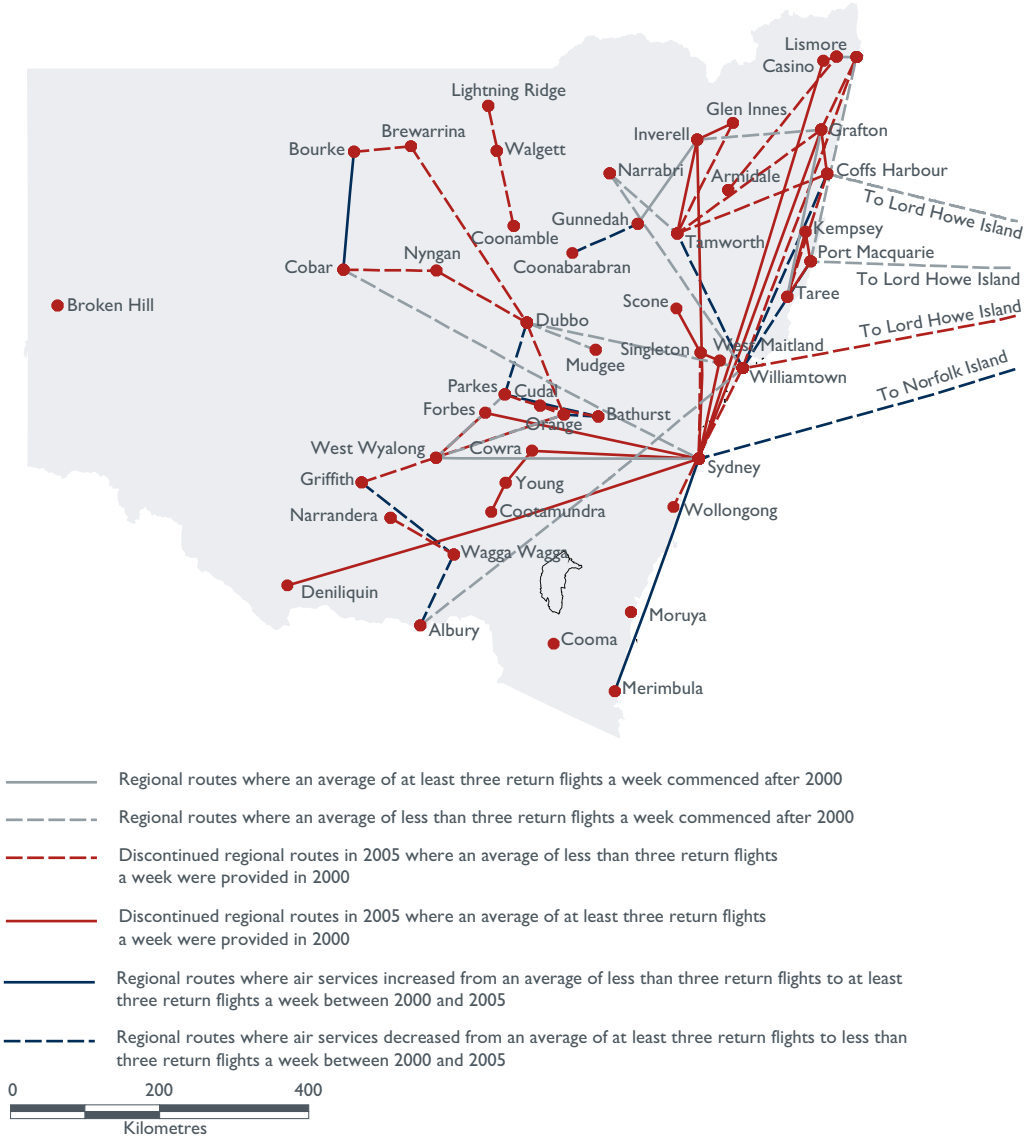
Figure 4.7 shows changes in intrastate air services between 2000 and 2005 on regional air routes in New South Wales.

Air services on two routes increased from an average of less than three return flights a week in 2000 to an average of at least three return flights a week in 2005 (see solid blue lines in Figure 4.7). On the other hand, air services on 10 routes decreased from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (see dotted blue lines in Figure 4.7). Excluding the Sydney–Norfolk Island route, all of these routes were between regional airports.

Nineteen routes, each with an average of at least three return flights a week (see solid red lines in Figure 4.7) in 2000 were discontinued by 2005. There were also 21 routes, each with an average of less than three return flights a week (see dotted red lines in Figure 4.7) in 2000 that were discontinued by 2005.

There were 16 routes where air services commenced or resumed between 2001 and 2005. Of these, there were three routes, each with an average of at least three return flights a week (see solid grey lines in Figure 4.7). Each of the remaining 13 routes had an average of less than three return flights a week (see dotted grey lines in Figure 4.7).

Figure 4.7 Changes in intrastate air services between 2000 and 2005 on regional routes in New South Wales



Source: BITRE time series estimates.

There were 13 airlines (Table 4.3) in 2000 and 11 airlines (Table 4.4) in 2005 serving regional air routes within New South Wales. Between 2000 and 2005, there was a high turnover in airlines serving regional New South Wales. Nine out of 13 airlines serving regional air routes within New South Wales in 2000 ceased to provide services by 2005. These airlines were Ansett Airlines, Country Connection Airlines, Flight West Airlines, Hazelton Airlines, Impulse Airlines, Kendell Airlines, Singleton-Yanda Airlines and Sunstate Airlines. There were seven airlines which started to provide intrastate air services on regional routes in New South Wales after 2000. They were Regional Express (which served 30 regional airports in 2005), Aeropelican Air Services, Alliance Airlines, Big Sky Express, Jetstar, Sunshine Express and Virgin Blue.

Table 4.3 Airlines serving regional airports in New South Wales, 2000

Airlines in NSW	*Airports served*
Air Link Pty Ltd	Bourke, Brewarrina, Cobar, Coonamble, Dubbo, Lightning Ridge, Mudgee, Nyngan and Walgett
Ansett Airlines of Australia	Ballina, Coffs Harbour
Country Connection Airlines	Cootamundra, Cowra, Forbes, West Wyalong and Young
Eastern Australia Airlines	Albury, Armidale, Ballina, Coffs Harbour, Dubbo, Grafton, Lord Howe Island, Moree, Narrabri, Port Macquarie, Tamworth, Taree and Williamtown
Flight West Airlines	Norfolk Island
Hazelton Airlines Pty Ltd	Albury, Armidale, Bathurst, Broken Hill, Casino, Cudal, Dubbo, Griffith, Lismore, Merimbula, Moruya, Narrandera, Orange, Parkes, Tamworth and Wagga Wagga
Horizon Airlines	Broken Hill, Deniliquin
Impulse Airlines	Armidale, Coffs Harbour, Cooma, Glen Innes, Inverell, Kempsey, Port Macquarie, Tamworth, Taree and Williamtown
Kendell Airlines	Albury, Ballina, Broken Hill, Coffs Harbour, Merimbula and Wagga Wagga
Norfolk Jet Express Pty Ltd	Norfork Island
Qantas Airways	Williamtown
Singleton-Yanda Airlines	Coonabarabran, Gunnedah, Scone, Singleton and West Maitland
Sunstate Airlines	Coffs Harbour, Lord Howe Island and Williamtown

Source: BITRE time series estimates.

Table 4.4 Airlines serving regional airports in New South Wales, 2005

Airlines in NSW	*Airports served*
Aeropelican Air Services	Williamtown
Air Link Pty Ltd	Bourke, Cobar, Coonamble, Dubbo, Lightning Ridge, Mudgee and Walgett
Alliance Airlines	Norfolk Island
Big Sky Express	Coonabarabran, Grafton, Gunnedah, Inverell and Taree
Eastern Australia Airlines	Albury, Armidale, Ballina, Coffs Harbour, Dubbo, Lord Howe Island, Moree, Narrabri, Port Macquarie, Tamworth, Wagga Wagga, Williamtown
Jetstar	Ballina, Williamtown
Norfolk Jet Express Pty Ltd	Norfolk Island
Qantas Airways	Norfolk Island, Williamtown
Regional Express	Albury, Armidale, Ballina, Bathurst, Broken Hill, Cooma, Dubbo, Griffith, Lismore, Merimbula, Moruya, Narrandera, Orange, Parkes, Wagga Wagga and West Wyalong
Sunshine Express	Armidale, Coffs Harbour, Port Macquarie and Tamworth
Virgin Blue	Ballina, Coffs Harbour and Williamtown

Source: BITRE time series estimates.

Northern Territory

Figure 4.8 shows the intrastate air services on regional routes in the Northern Territory. There were 33 intrastate routes in 2005. Of these, there were 20 routes, each with an average of at least three return flights a week and 13 routes, each with an average of less than three return flights a week. By comparison, there were 56 intrastate routes in the state in 2000. Of these, there were 27 routes, each with an average of at least three return flights a week and 29 routes, each with an average of less than three return flights a week.

Figure 4.8 Intrastate air services on regional routes in the Northern Territory, 2005

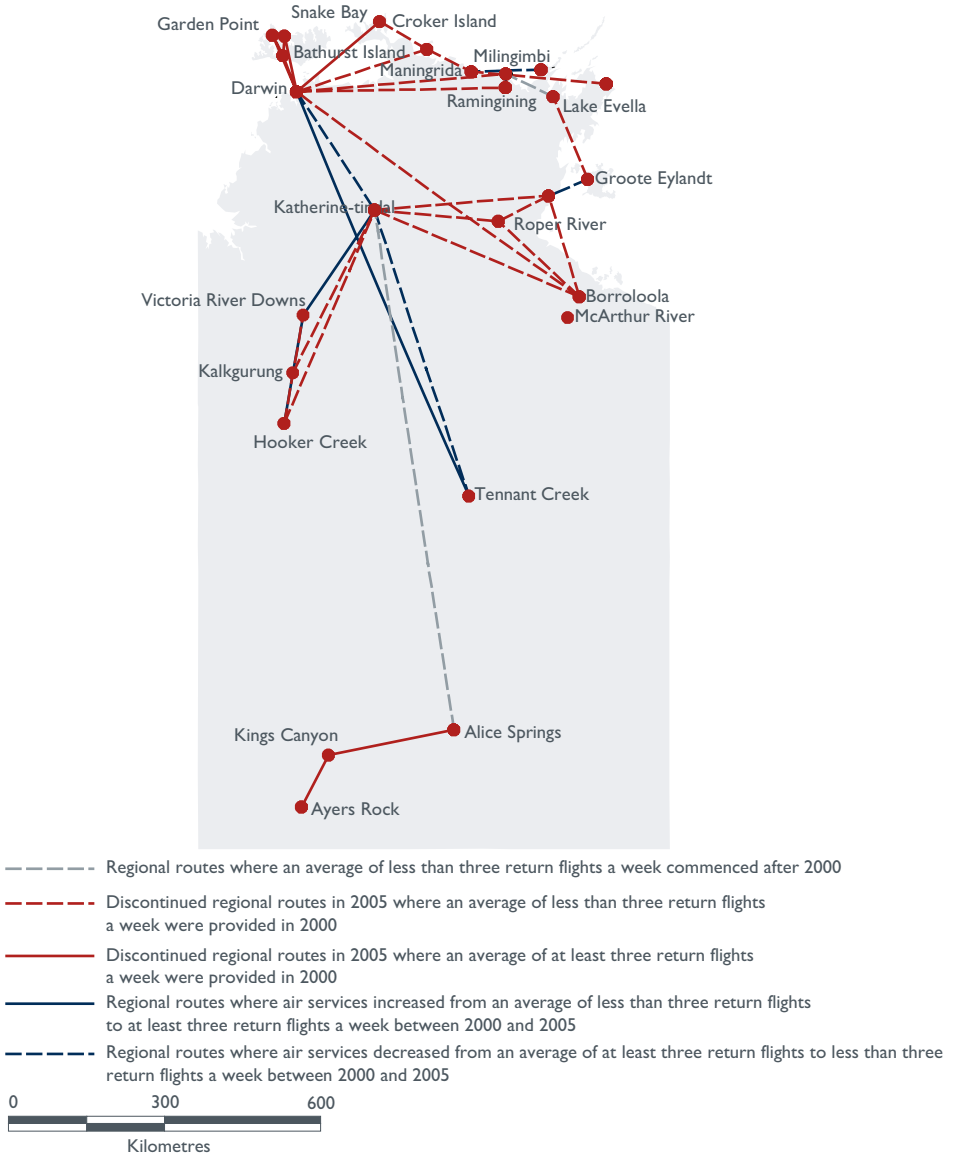
Source: BITRE time series estimates.

Figure 4.9 shows changes in intrastate air services between 2000 and 2005 on regional air routes in the Northern Territory. There were four routes where air services increased from an average of less than three return flights a week in 2000 to an average of at least three return flights a week in 2005 (see solid blue lines in Figure 4.9). As shown in Figure 4.9, air services on five routes went from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (see dotted blue lines in Figure 4.9).

There were seven routes, each with an average of at least three return flights a week (solid red lines in Figure 4.9) in 2000, that were discontinued by 2005. Another 19 routes, each with an average of less than three return flights a week (see dotted red lines in Figure 4.9) in 2000 were also discontinued by 2005.

There were two routes where air services commenced or resumed between 2001 and 2005. Each route had an average of less than three return flights a week (see dotted grey lines in Figure 4.9).

Figure 4.9 Changes in intrastate air services between 2000 and 2005 on regional routes in the Northern Territory



Source: BITRE time series estimates.

There were five airlines in 2000 (Table 4.5) and seven airlines in 2005 (Table 4.6) serving regional air routes within the Northern Territory. Except for Ansett Airlines, all airlines serving on regional air routes continued to provide services in 2005. As mentioned in Chapter 3, the consolidation of air services by Air North between 2000 and 2003 has reduced the number of regional airports in the Territory from 21 airports in 2000 to only nine in 2005.

Table 4.5 Airlines serving regional airports in the Northern Territory, 2000

Airlines in NT	*Airports served*
Air North Regional	Alice Springs, Ayers Rock, Bathurst Island, Borroloola, Croker Island, Darwin, Elcho Island, Garden Point, Hooker Creek, Kalkgurung, Katherine-Tindal, Kings Canyon, Maningrida, Milingimbi, Numbulwar, Ramingining, Roper River, Snake Bay, South Goulburn Island, Tennant Creek and Victoria River Dow.
Ansett Airlines of Australia	Alice Springs, Ayers Rock, Darwin, Gove, Groote Eylandt and Katherine-Tindal
Mission Aviation Fellowship	Elcho Island, Gove, Groote Eylandt, Lake Evella, Maningrida, Milingimbi, Numbulwar and Ramingining
National Jet Systems Pty Ltd	Darwin, McArthur River
Qantas Airways	Alice Springs, Ayers Rock, Darwin, Gove, Groote Eylandt and Katherine-Tindal

Source: BITRE time series estimates.

Table 4.6 Airlines serving regional airports in the Northern Territory, 2005

Airlines in NT	*Airports served*
Aboriginal Air Services	Alice Springs, Darwin, Hooker Creek, Kalkgurung, Katherine-Tindal, Tennant Creek, Victoria River Dow and Yuendumu.
Air North Regional	Alice Springs, Darwin, Elcho Island, Gove, Groote Eylandt, Katherine-Tindal, Meningrida and Tennant Creek.
Mission Aviation Fellowship	Elcho Island, Gove, Groote Eylandt, Lake Evella, Maningrida, Milingimbi and Ramingining
National Jet Systems Pty Ltd	Darwin, McArthur River
Qantas Airways	Alice Springs, Ayers Rock, Darwin and Katherine-Tindal
Vincent Aviation	Alice Springs, Darwin, Groote Eylandt and Tennant Creek
Australian Air Express	Alice Springs, Darwin

Source: BITRE time series estimates.

Queensland

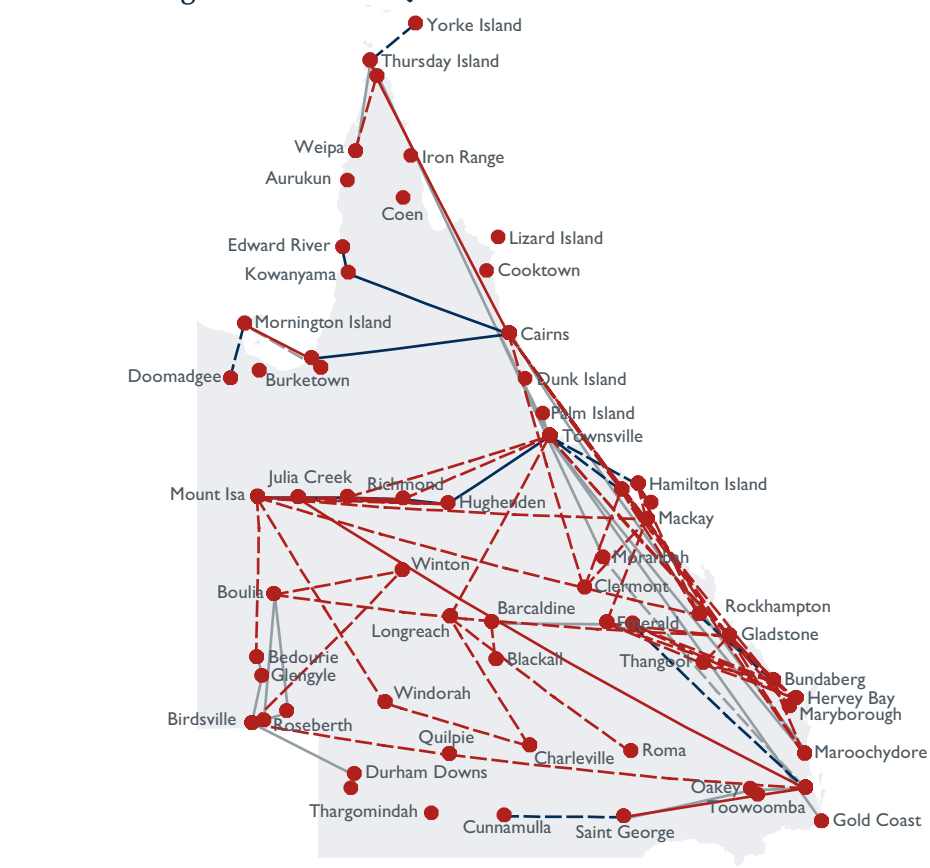
Figure 4.10 shows the intrastate air services on regional routes in Queensland. There were 105 intrastate routes in 2005. Of these, there were 49 routes, each with an average of at least three return flights a week and 56 routes, each with an average of less than three return flights a week. By comparison, there were 148 intrastate routes in 2000. Of these, there were 51 routes, each with an average of at least three return flights a week and 97 routes, each with an average of less than three return flights a week.

Figure 4.10 Intrastate air services on regional routes in Queensland, 2005

Source: BITRE time series estimates.

Figure 4.11 shows changes in intrastate air services between 2000 and 2005 on regional routes in Queensland. Air services on seven routes increased from an average of less than three return services a week in 2000 to an average of more than three return flights a week in 2005 (see solid blue lines in Figure 4.11). As shown, air services on eight routes decreased from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (see dotted blue lines in Figure 4.11).

Figure 4.11 Changes in intrastate air services between 2000 and 2005 on regional routes in Queensland



Source: BITRE time series estimates.

Air services on eight routes with an average of at least three return flights a week in 2000 (see solid red lines in Figure 4.11) were discontinued by 2005. Air services on another 55 routes with an average of less than three return flights a week (see dotted red lines in Figure 4.11) in 2000 were discontinued by 2005.

There were 20 routes where air services commenced or resumed between 2001 and 2005. Of these, there were three routes, each with an average of at least three return flights a week (see solid grey lines in Figure 4.11). Seventeen routes had an average of less than three return flights a week (see dotted grey lines in Figure 4.11).

There were 10 airlines (Table 4.7) in 2000 and 11 airlines (Table 4.8) in 2005 serving regional air routes within Queensland. Between 2001 and 2005, four airlines ceased intrastate services on regional air routes in the state. These airlines were Ansett Airlines, Eastland, Flight West Airlines and Kendell Airlines. There were five airlines that commenced or resumed intrastate air services on regional routes in Queensland after 2000. They were: Australian Air Express, Airlines of South Australia, Alliance Airlines, Jetstar and Inland Pacific Air.

Table 4.7 Airlines serving regional airports in Queensland, 2000

Airlines in QLD	*Airports served*
Ansett Airlines of Australia	Cairns, Hamilton Island, Mackay, Maroochydore, Mount Isa, Proserpine, Rockhampton, Townsville and Weipa
Eastland Air	Cunnamulla, Saint George, Thargomindah and Toowoomba
Flight West Airlines	Bamaga, Barcaldine, Bedourie, Birdsville, Blackall, Bundaberg, Cairns, Charleville, Cloncurry, Emerald, Gladstone, Hervey Bay, Hughenden, Julia Creek, Longreach, Mackay, Mount Isa, Proserpine, Quilpie, Richmond, Rockhampton, Roma, Thangool, Thursday Island, Townsville, Weipa, Windorah and Winton
Kendell Airlines	Rockhampton
MacAir	Brampton Island, Burketown, Cairns, Cloncurry, Cooktown, Doomadgee, Dunk Island, Edward River, Hamilton Island, Karumba, Kowanyama, Lizard Island, Mackay, Mornington Island, Mount Isa, Normanton and Townsville
Qantas Airways	Hamilton Island, Mackay, Maroochydore, Mount Isa, Proserpine and Townsville
Skytrans Airlines	Aurukun, Bamaga, Cairns, Coen, Iron Range, Thursday Island, Weipa and Yorke Island
Sunshine Express	Maroochydore
Sunstate Airlines	Blackwater, Bundaberg, Cairns, Emerald, Gladstone, Hamilton Island, Hervey Bay, Mackay, Maroochydore, Maryborough, Proserpine, Rockhampton, Thursday Island and Townsville
Transtate Airlines	Brampton Island, Burketown, Cairns, Cooktown, Doomadgee, Dunk Island, Edward River, Hamilton Island, Karumba, Kowanyama, Lizard Island, Mackay, Mornington Island, Mount Isa, Normanton

Source: BITRE time series estimates.

Table 4.8 Airlines serving regional airports in Queensland, 2005

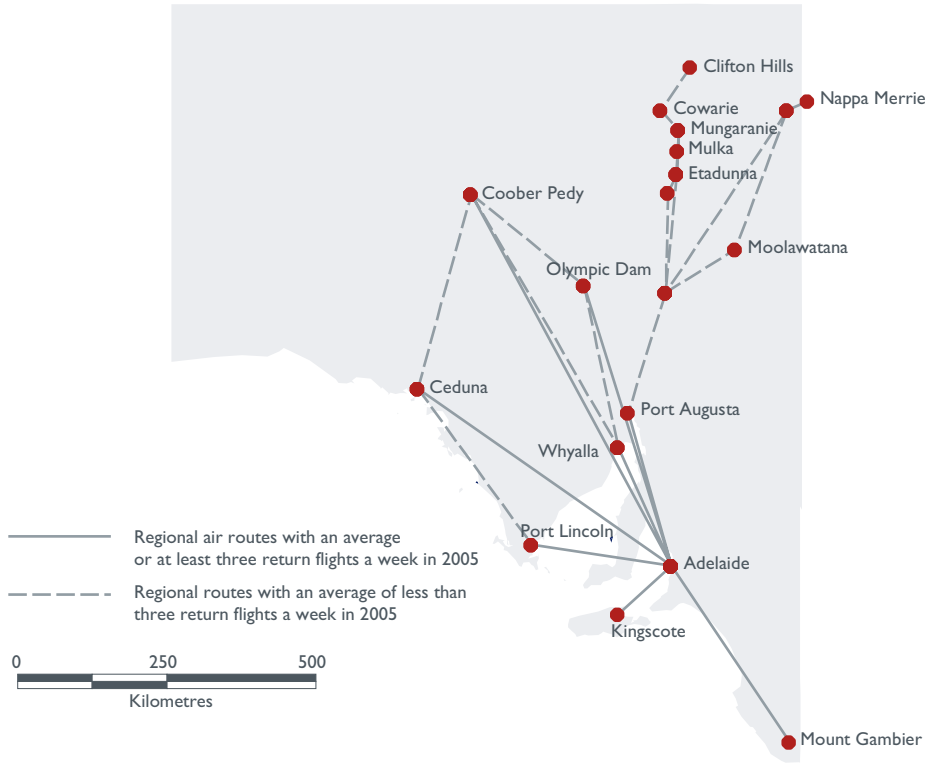
Airlines in QLD	*Airports served*
Australian Air Express	Cairns, Mount Isa, Mackay, Rockhampton and Townsville
Airlines of South Australia	Ballera, Bedourie, Birdsville, Boulia, Durham Downs, Durrie, Glengyle and Roseberth
Alliance Airlines	Townsville
Inland Pacific Air	Palm Island, Townsville
Jetstar	Cairns, Hamilton Island, Hervey Bay, Mackay, Maroochydore, Proserpine, Rockhampton and Townsville
MacAir	Birdsville, Bourlia, Burketown, Cairns, Charleville, Cloncurry, Cunnamula, Doomadgee, Dunk Island, Edward River, Hughenden, Julia Creek, Kowanyama, Lizard Island, Longreach, Moranbah, Mornington Island, Mount Isa, Normanton, Oakey, Quilpie, Richmond, Saint George, Thargomindah, Townsville, Windorah and Winton
Qantas Airways	Cairns, Hamilton Island, Mackay, Maroochydore, Mount Isa, Rockhampton and Townsville
Skytrans Airlines	Coen, Cooktown, Iron Range, Karumba, Thursday Island, Townsville and Yorke Island
Sunshine Express	Hervey Bay, Maroochydore, Maryborough and Thangool
Sunstate Airlines	Barcaldine, Blackall, Balckwater, Bundaberg, Cairns, Charleville, Emerald, Gladstone, Hamilton Island, Hervey Bay, Longereach, Mackay, Maroochydore, Rockhampton, Roma, Thursday Island, Townsville and Weipa
Virgin Blue	Cairns, Hamilton Island, Hervey Bay, Mackay, Maroochydore, Proserpine, Rockhampton and Townsville

Source: BITRE time series estimates.

South Australia

Figure 4.10 shows the intrastate air services on regional air routes in South Australia. There were 26 intrastate routes in 2005. Of these, there were eight routes, each with an average of at least three return flights a week and 18 routes, each with an average of less than three return flights a week. By comparison, there were 14 intrastate routes in the state in 2000. Of these, there were 11 routes, each with an average of at least three return flights a week and three routes, each with an average of less than three return flights a week.

Figure 4.12 Intrastate air services on regional routes in South Australia, 2005

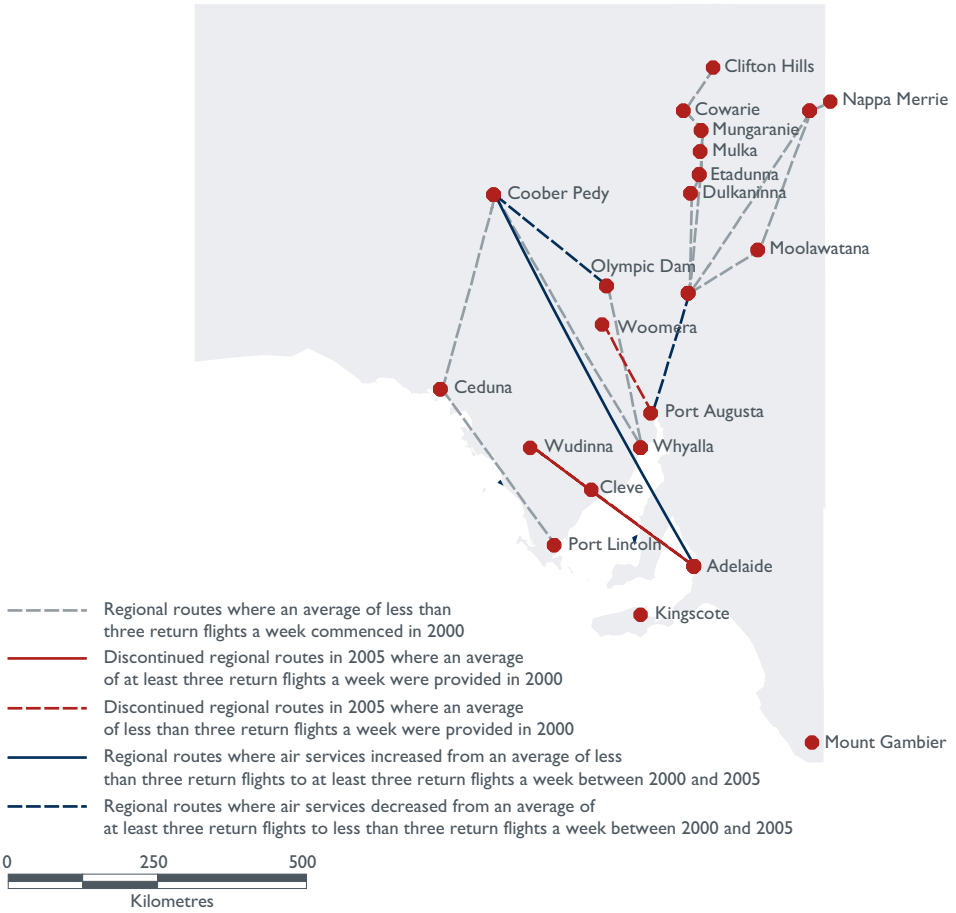


Source: BITRE time series estimates.

Figure 4.13 shows changes in intrastate air services between 2000 and 2005 on regional routes in South Australia. Air services on only one route increased from an average of less than three return flights a week in 2000 to an average of at least three return flights a week in 2005 (see solid blue lines in Figure 4.13). Air services of two routes decreased from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (see dotted blue lines in Figure 4.13).

Air services on two routes with an average of at least three return flights a week (see solid red lines in Figure 4.13) in 2001 were discontinued by 2005. These routes were Adelaide–Cleve and Cleve–Wudinna. Similarly, air services on two routes with an average of less than three return flights a week (see dotted red lines in Figure 4.13) in 2000 were discontinued by 2005. These routes were Wudinna–Adelaide and Port Augusta–Woomera.

Figure 4.13 Changes in intrastate air services between 2000 and 2005 on regional routes in South Australia



Source: BITRE time series estimates.

There were 16 routes where air services commenced or resumed between 2001 and 2005. Each of these routes had an average of less than three return flights a week (see dotted grey lines in Figure 4.13). Passenger movements on these routes were very low.

There were five airlines (Table 4.9) in 2000 and six airlines (Table 4.10) in 2005 serving regional air routes within South Australia. Between 2000 and 2005, Kendell ceased providing air services on regional air routes in the state. There were two airlines that commenced or resumed intrastate air services on regional routes in South Australia between 2001 and 2005. They were Great Western Airlines and Regional Express.

Table 4.9 Airlines serving regional airports in South Australia, 2000

Airlines in SA	*Airports served*
Airlines of South Australia	Cleve, Leigh Creek, Port Augusta, Port Lincoln, Woomera and Wudinna
Emu Air Charter Pty Ltd	Kingscote
Kendell Airlines	Ceduna, Coober Pedy, Kingscote, Mount Gambier, Olympic Dam, Port Lincoln and Whyalla
O'Connors Air Services	Mount Gambier, Whyalla
Whyalla Airlines	Cleve, Whyalla and Wudinna

Source: BITRE time series estimates.

Table 4.10 Airlines serving regional airports in South Australia, 2005

Airlines in SA	*Airports served*
Airlines of South Australia	Clifton Hills, Cordillo Downs, Cowarie, Dulkaninna, Etadunna, Innamincka, Leigh Creek, Moolawatana, Mulka, Mungaranie, Nappa Merrie, Port Augusta and Port Lincoln
Eastern Australia Airlines	Kingscote, Port Lincoln
Emu Air Charter Pty Ltd	Kingscote
Great Western Airlines	Kingscore, Port Lincoln
O'Connors Air Services	Mount Gambier, Whyalla
Regional Express	Ceduna, Coober Pedy, Kingscote, Mount Gambier, Olympic Dam, Port Lincoln and Whyalla

Source: BITRE time series estimates.

Tasmania

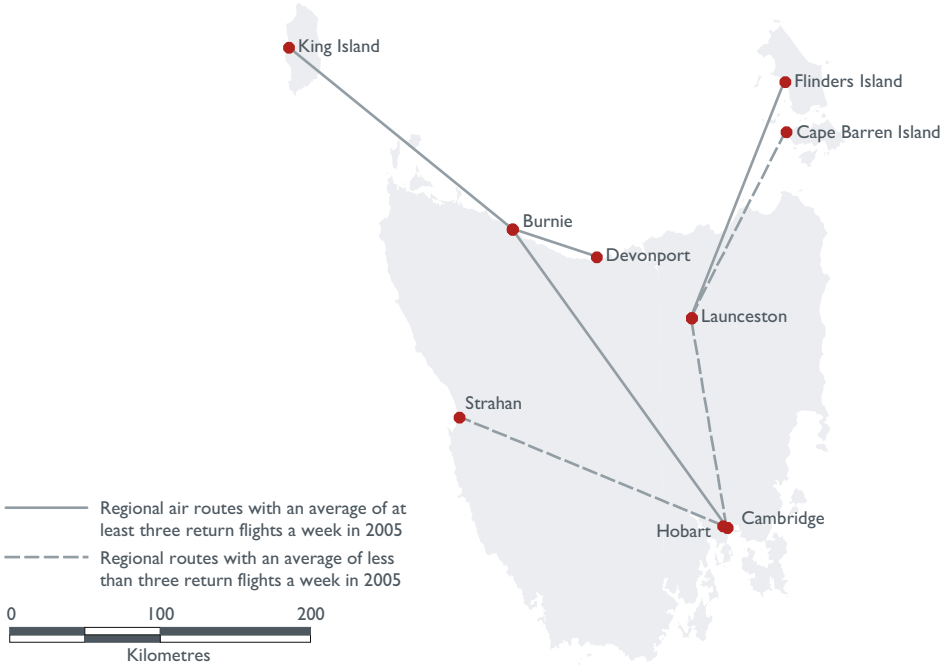
Figure 4.14 shows the intrastate air services on regional routes in Tasmania. In 2005, there were seven intrastate routes. Of these, there were four routes, each with an average of at least three return flights a week and three routes, each with an average of less than three return flights a week. By comparison, there were six intrastate routes in the state in 2000. Each of these routes had an average of at least three return flights a week.

Tasmania experienced marginal changes in intrastate air services on regional air routes between 2000 and 2005. Air services on one route decreased from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (dotted blue lines in Figure 4.15).

The King Island–Devonport air service which had an average of less than three return flights a week in 2000 (see dotted red lines in Figure 4.15) was discontinued in 2005.

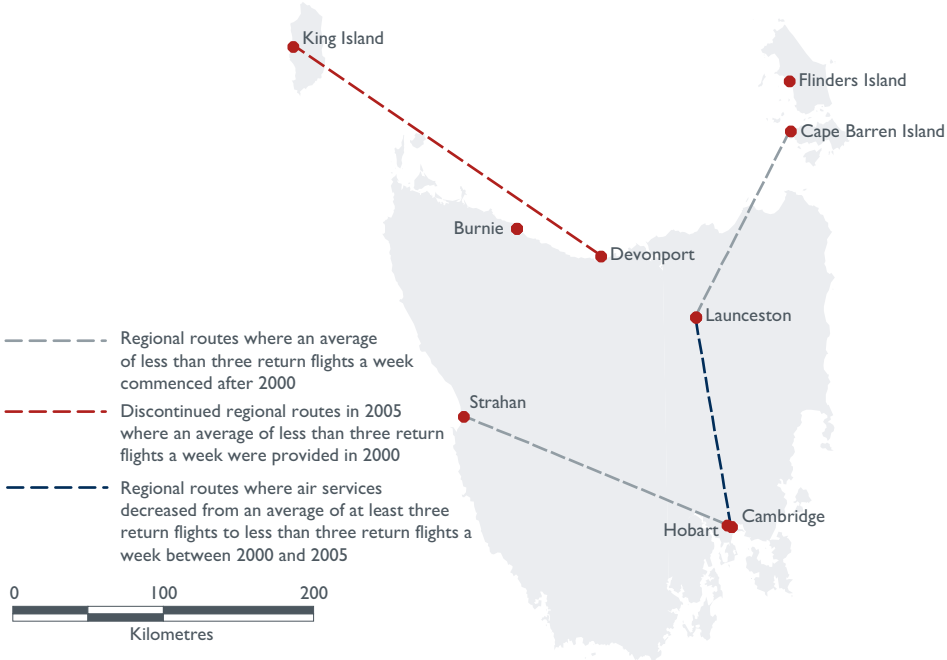
There were two routes that commenced or resumed between 2001 and 2005. Each had an average of less than three return flights a week (see dotted grey lines in Figure 4.15).

Figure 4.14 Intrastate air services on regional routes in Tasmania, 2005



Source: BITRE time series estimates.

Figure 4.15 Changes in intrastate air services between 2000 and 2005 on regional air routes in Tasmania



Source: BITRE time series estimates.

There were six airlines in both 2000 (Table 4.11) and 2005 (Table 4.12) serving regional air routes within Tasmania. Between 2001 and 2005, Ansett Airlines, Island Airlines, Paravion and Qantas Airways ceased services to regional Tasmania. However, in the same period, Australian Air Express, Eastern Australia Airlines, Jetstar and Regional Express commenced intrastate services within Tasmania.

Table 4.11 Airlines serving regional airports in Tasmania, 2000

Airlines in TAS	*Regional airports served*
Ansett Airlines of Australia	Hobart, Launceston
Island Airlines	Flinders Island, Hobart and Launceston
Island Airlines Tasmania	Flinders Island, Launceston
Paravion	Burnie, Flinders Island, Hobart and Launceston
Qantas Airways	Hobart, Launceston
Tasair	Burnie, Devonport, Hobart and King Island

Source: BITRE time series estimates.

Table 4.12 Airlines serving regional airports in Tasmania, 2005

Airlines in TAS	*Regional airports served*
Australian Air Express	Hobart, Launceston
Airlines of Tasmania	Cambridge, Cape Barren Island, Flinders Island, Launceston and Strahan
Eastern Australia Airlines	Burnie, Devonport
Jetstar	Hobart, Launceston
Regional Express	Burnie, Devonport and King Island
Tasair	Burnie, Devonport, Hobart and King Island

Source: BITRE time series estimates.

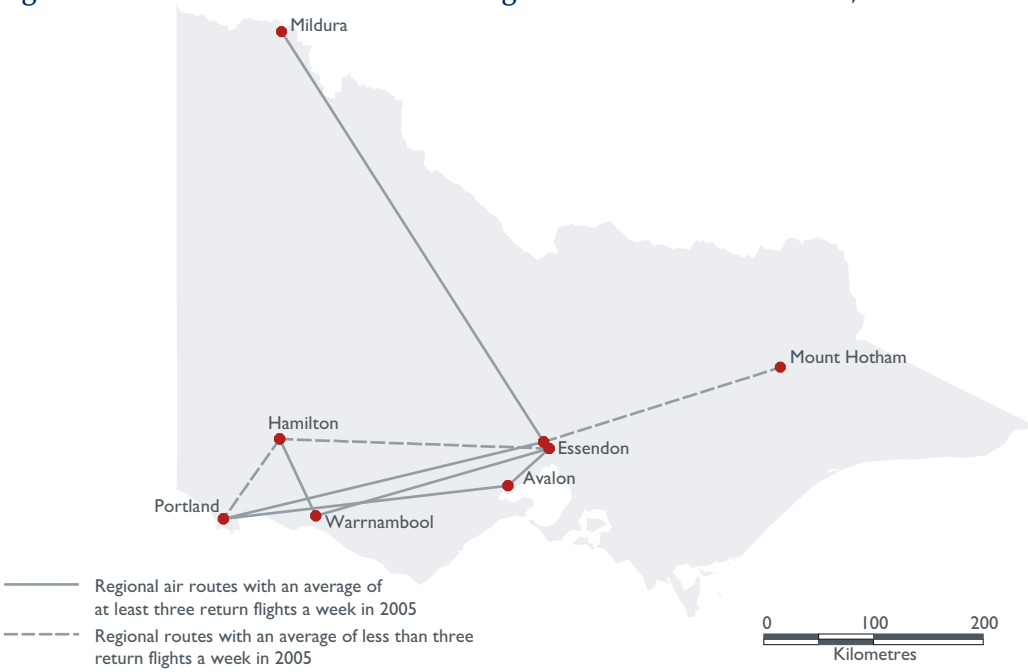
Victoria

Figure 4.16 shows the intrastate air services on regional air routes in Victoria. There were seven intrastate routes in 2005. Of which, there were four routes where each route had average of at least three return flights a week and three routes where each route had an average of less than three return flights a week. By comparison, there were five intrastate routes in the state in 2000. Of which, there were two routes where each route had an average of at least three return flights a week and three routes where each route had an average of less than three return flights a week.

Figure 4.17 shows changes in intrastate air services between 2000 and 2005 on regional routes in Victoria. Air services on two routes with an average of less than three return flights a week in 2000 (see dotted red lines in Figure 4.17) were discontinued in 2005.

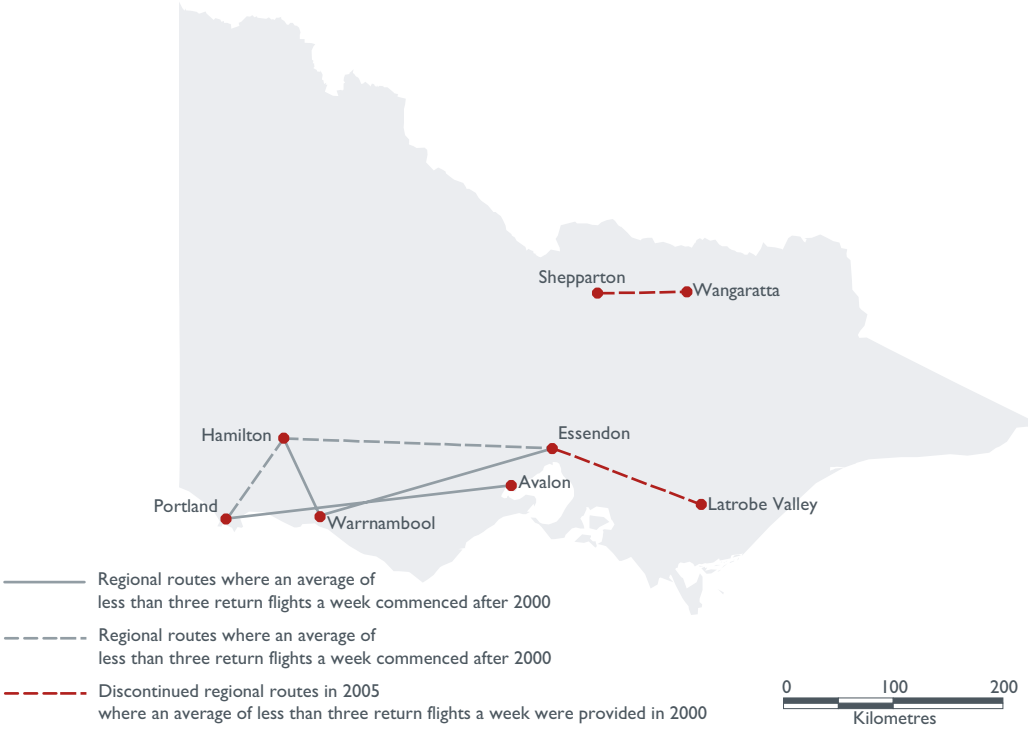
There were five routes where air services commenced or resumed between 2001 and 2005. There were three routes where each route had an average of at least three return flights a week (see solid grey lines in Figure 4.17) and two routes where each route had an average of less than three return flights a week (see dotted grey lines in Figure 4.17).

Figure 4.16 Intrastate air services on regional air routes in Victoria, 2005



Source: BITRE time series estimates.

Figure 4.17 Changes in intrastate air services between 2000 and 2005 on regional air routes in Victoria



Source: BITRE time series estimates.

All five airlines serving regional air routes within Victoria in 2000 ceased operations by 2005 (Table 4.13). In 2005, three airlines provided intrastate services on regional routes in Victoria (Table 4.14). They were Eastern Australia Airlines, Regional Express and Sharp Aviation.

Table 4.13 Airlines serving regional airports in Victoria, 2000

Airlines in VIC	*Regional airports served*
Horizon Airlines	Mildura, Shepparton, Swan Hill and Wangaratta
Island Airlines	Latrobe Valley
Island Airlines Tasmania	Latrobe Valley
Kendell Airlines	Mildura, Portland
Southern Australia Airlines Pty Ltd	Mildura, Mount Hotham

Source: BITRE time series estimates.

Table 4.14 Airlines serving regional airports in Victoria, 2005

Airlines in VIC	*Regional airports served*
Eastern Australia Airlines	Mildura, Mount Hotham
Regional Express	Mildura, Portland
Sharp Aviation	Hamilton, Portland and Warrnambool

Source: BITRE time series estimates.

Western Australia

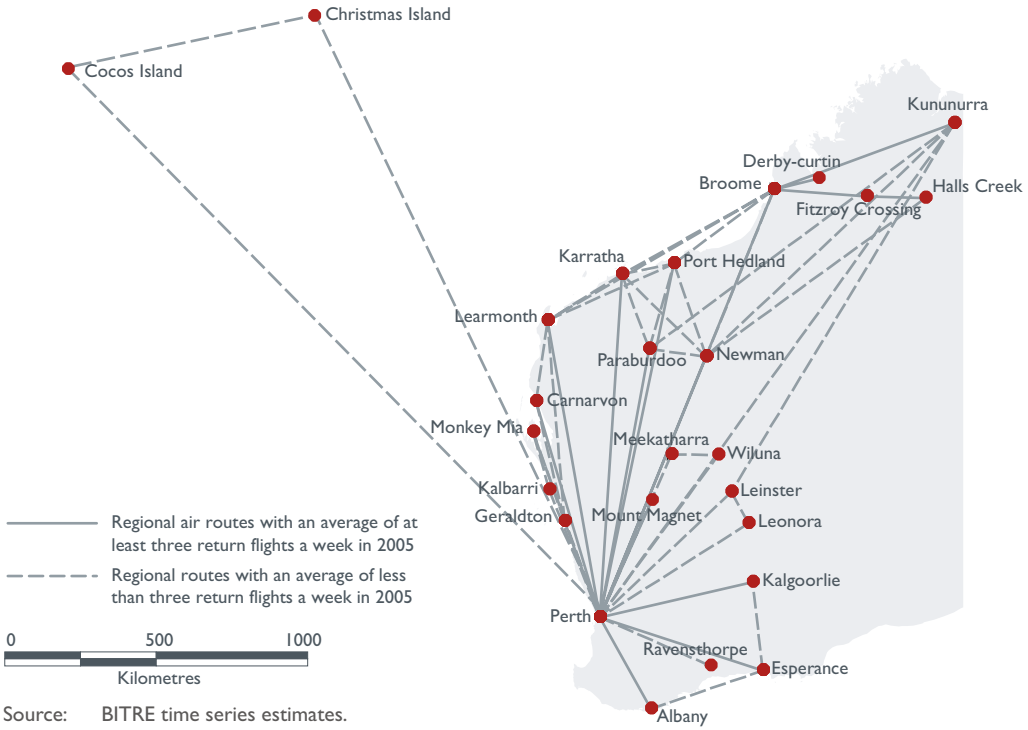
Figure 4.18 shows the intrastate air services on regional routes in Western Australia. In 2005, there were 53 intrastate routes. Of these, there were 17 routes, each with an average of at least three return flights a week and 36 routes, each with an average of less than three return flights a week. By comparison, there were 76 intrastate routes in the state in 2000. Of these, there were 21 routes, each with an average of at least three return flights a week and 35 routes, each with an average of less than three return flights a week.

Figure 4.19 shows changes in intrastate air services between 2000 and 2005 on regional routes in Western Australia. Air services on two routes increased from an average of less than three return flights a week in 2000 to an average of at least three return flights a week in 2005 (see solid blue lines in Figure 4.19). Air services on four routes decreased from an average of at least three return flights in 2000 to an average of less than three return flights a week in 2005 (see dotted blue lines in Figure 4.19).

Air services on five routes with an average of at least three return flights a week in 2000 ceased services by 2005 (see solid red lines in Figure 4.19). These routes were Margaret River–Busselton, Perth–Busselton, Mount Keith–Leinster, Perth–Margaret River and Mount Keith–Perth. In addition, air services on 27 routes with an average of less than three return flights a week (see red dotted lines in Figure 4.19) in 2000 were discontinued in 2005.

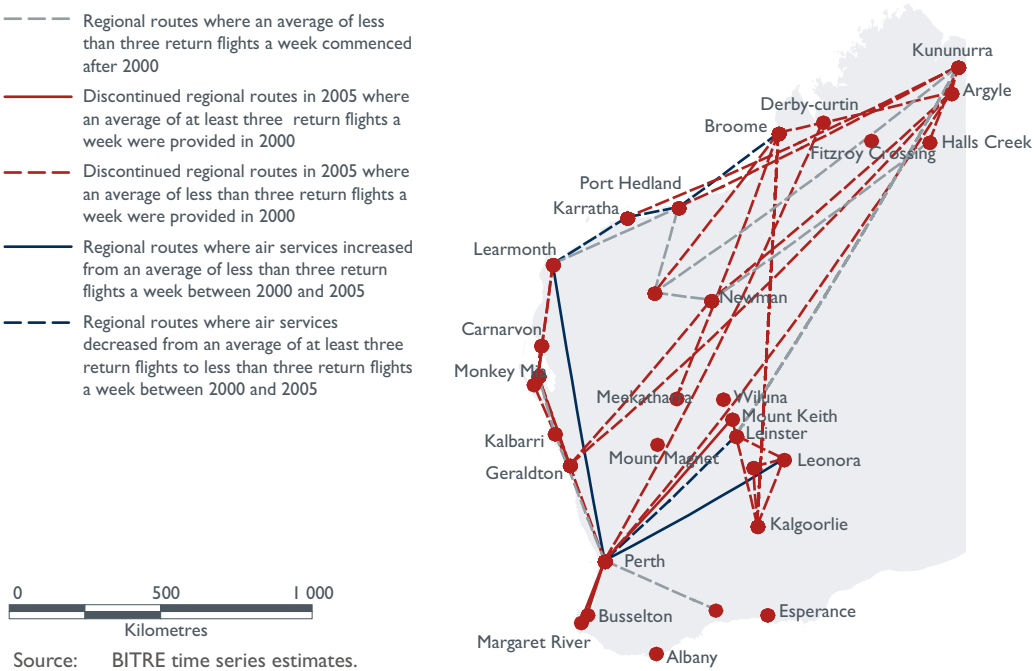
There were nine routes with an average of less than three return flights a week (dotted green lines in Figure 4.19) where air services commenced or resumed between 2001 and 2005.

Figure 4.18 Intrastate air services on regional routes in Western Australia, 2005



Source: BITRE time series estimates.

Figure 4.19 Changes in intrastate air services between 2000 and 2005 on regional air routes in Western Australia



Source: BITRE time series estimates.

There were five airlines in both 2000 (Table 4.15) and 2005 (Table 4.16) serving regional air routes within Western Australia. Between 2000 and 2005, Ansett Airlines, Broome Airlines, Northwest Regional and Western Airlines ceased serving regional air routes within Western Australia. However, in the same period, Air North, Golden Eagle Aviation, Great Western Airlines and Virgin Blue commenced providing intrastate air services on regional air routes in Western Australia.

Table 4.15 Airlines serving regional airports in Western Australia, 2000

Airlines in WA	*Regional airports served*
Ansett Airlines of Australia	Argyle, Broome, Derby-Curtin, Geraldton, Kalgoorlie, Karratha, Kununurra, Learmonth, Meekatharra, Newman and Port Hedland
Broome Airlines	Broome, Fitzroy Crossing, Halls Creek and Kununurra
Maroomba Airlines	Busselton, Margaret River and Mount Magnet
National Jet Systems Pty Ltd	Christmas Island, Cocos Island
Northwest Regional	Broome, Fitzroy Crossing, Halls Creek, Karratha, Learmonth and Port Hedland
Qantas Airways	Broome, Kalgoorlie, Karratha, Paraburdoo and Port Hedland
Skippers Aviation	Broome, Busselton, Derby-Curtin and Margaret River
Skywest Airlines Pty Ltd	Albany, Carnarvon, Esperance, Geraldton, Kalgoorlie, Laverton, Learmonth, Leinster, Leonora, Meekatharra, Monkey Mia, Month Keith, Shark Bay and Wiluna
Western Airlines	Geraldton, Kalbarri, Shark Bay and Useless Loop

Source: BITRE time series estimates.

Table 4.16 Airlines serving regional airports in Western Australia, 2005

Airlines in WA	*Regional airports served*
Air North Regional	Broome, Kununurra
Golden Eagle Aviation	Broome, Derby-Curtin, Fitzroy Crossing, Halls Creek and Port Hedland
Great Western Airlines	Halls Creek, Newman
Maroomba Airlines	Mount Magnet
National Jet Systems Pty Ltd	Christmas Island, Cocos Island and Ravensthorpe
Qantas Airways	Broome, Kalgoorie, Karratha, Kununurra, Leinster, Newman, Paraburdoo and Port Hedland
Skippers Aviation	Geraldton, Kalbarri, Laverton, Meekatharra, Monkey Mia and Wiluna
Skywest Airlines Pty Ltd	Albany, Broome, Carnarvon, Esperance, Geraldton, Kalgoorlie, Karratha, Kununurra, Learmonth, Leinster, Leonora, Newman and Port Hedland
Virgin Blue	Broome

Source: BITRE time series estimates.

4.3 Airport catchment analysis

This section presents major findings related to the accessibility of regular scheduled air services in Australia.

In this section, accessibility is a general term used to describe the extent to which a system could be reached by users. It should not to be confused with 'usability' which describes how easily a system could be used by any type of user (e.g. timeliness, service frequency, or some measure of the relative 'connectivity' provided by other modes of transport to access the nearest airport).

The airport catchment analysis evaluates the ability to access regular scheduled air services by residents in urban centres or localities. An airport generally serves populations and businesses in its surrounding area. A catchment area is the potential geographic areas for drawing passengers (GAO, 2003). The analysis identifies the size and location of the target population located within a specified access distance of one or more airports.

The following section outlines the data sources, assumptions and methodology used for the analysis.

4.3.1 Analysis approach

Data sources

Two data sources were used in the analyses:

- A list of all airports providing regional air services in 2005 was extracted from the BTRE regional air transport time series database.
- Population and urban centres/localities (UC/L) data was drawn from the 2001 Census of Population and Housing data. UC/Ls are census districts (CDs) grouped together to approximate the extent and boundaries of all towns with an enumerated population of 200 people or more. The ABS defines towns with populations above 1000 people as 'urban centres' and towns with populations between 200 and 999 people as 'localities'. An extensive set of criteria is used to define the boundaries of a UC/L. These criteria include population size, population density, number of dwellings and so forth. The UC/L structure does not cover the entire Australian population (ABS 2001c). In 2001, the defined UC/Ls covered 17 million people. There were 2.6 million people or 13.3 per cent of the population who lived in communities of less than 200 people. They were classified under rural and migratory areas and were outside the UC/L classification. These people were excluded from the analysis. There were 1709 UC/Ls in 2001. Of which, 715 were urban centres and 994 were localities.

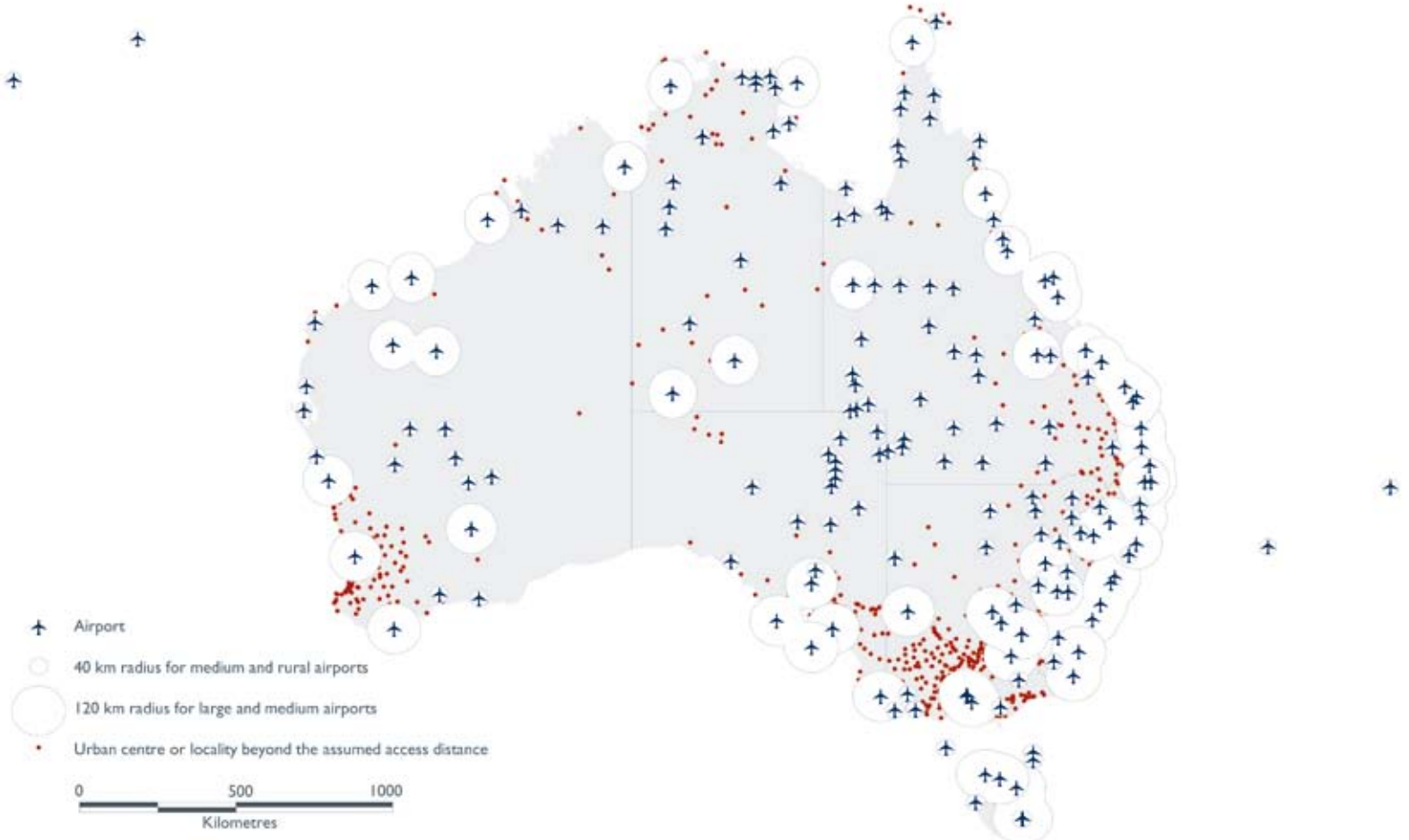
Assumptions

Two set of analyses were undertaken in this section based on different assumptions.

The first analysis assumed that the reasonable access distances to regular scheduled air services within Australia were (Figure 4.20):

- 120 km to large or medium airport
- 40 km to small or rural airport.

Figure 4.20 Locations beyond the assumed access distance of 40 km or 120 km to air services in Australia, 2005



Sources: ABS Census data 2001 and BITRE time series estimates.

The second analysis assumed that the reasonable access distance to regular scheduled air services within Australia was 120 km for each airport, regardless of the airport size (Figure 4.21).

The notion of 'reasonable access distance' based on the assumptions is subjective and arbitrary. What is considered to be 'reasonable' by some may not necessarily be 'reasonable' to others. Nonetheless, the two sets of assumptions allow general assessments of the geographic coverage on the existing air services in regional Australia.

In the following analyses, reasonable access distance measures a specified straight line distance from an airport. It is assumed that beyond the specified access distance, people were presumed to be unwilling to travel to an airport and consequently do not consider air services to be an accessible mode of transport.

Methodology

The airport catchment analyses were conducted using MapInfo, a Geographic Information System (GIS) software. It is essentially a geospatial analysis program.

First, all airports with designated size and all UC/Ls defined in Census 2001 were mapped.

A circular buffer was then computed around each airport. In the first analysis (Figure 4.20), a circular buffer of 120 km was created around each large and medium airport, while a circular buffer of 40 km was created around each small and rural airport. In the second analysis (Figure 4.21), a circular buffer with a 120 km radius was created for each airport.

These buffer areas were overlaid on UC/Ls and population data. All UC/Ls located outside the buffers were selected. Statistics were then computed for the total number of UC/Ls and related populations located within and beyond these buffer areas.

4.3.2 Analysis results

Based on access distances of 40 km and 120 km

In 2005, there were 181 airports providing air services on regional air routes. Of these, 62 were designated as large or medium airports and 119 as small or rural airports (Figure 4.20). The question is, how many of the UC/Ls as defined by the ABS in 2001, fell outside the specified catchment areas?

In 2005, there were 1709 UC/Ls in Australia. Based on the assumed access distance of 40 km/120 km to at least one airport with regular scheduled air services, 1377 UC/Ls (80.6 per cent) were located within the assumed access distance and 332 UC/Ls (19.4 per cent) were located beyond the assumed access distance (Table 4.17). Of the 332 UC/Ls located beyond the assumed access distance, 279 UC/Ls (16.3 per cent) were in a population size of less than 2000 people, 51 UC/Ls (3 per cent) were in population size between 2000 and 20 000 people and 2 UC/Ls (less than 1 per cent) were in a population size between 20 000 and 100 000 people. The two UC/Ls located beyond the assumed access distance were Shepparton-Mooroopna in Victoria (35 828 people) and Bunbury in Western Australia (45 299 people). Both have reasonably large populations but were located just outside the assumed access distance to an airport. The closest airport to Shepparton-Mooroopna is Albury. The shortest distance between

the two locations is 143.7 km. Bunbury is located in between Perth and Albany. The distance between Perth airport and Bunbury is about 156 km and the distance between Albany airport and Bunbury is about 266 km. As a result, both Shepparton-Mooroopna and Bunbury fell outside of the assumed access distance of 120 km.

Overall, there were 17.1 million people living in UC/Ls in 2005. A total of 16.5 million people (97 per cent) lived within the assumed access distance to regular scheduled air services (Table 4.17). Of the remaining 518 000 people (3 per cent) living beyond the assumed access distance to air services, close to 170 000 people (1 per cent) lived in a population size of less than 2000 people, 267 000 people (1.6 per cent) lived in a population size between 2000 to 20 000 people and 81 000 people (0.5 per cent) lived in a population size of more than 100 000 people.

Table 4.17 shows the disaggregation of UC/Ls into four population sizes.

Table 4.17 Provision of regional air services to urban centres and localities within and beyond 40 km or 120 km, 2005

	Centres within the assumed access distance of 40 km or 120 km		*Centres beyond the assumed access distance of 40 km or 120 km*	
Population size	*No. of urban centres and localities*	*Population (thousands)*	*No. of urban centres and localities*	*Population (thousands)*
Less than 2000	1 006	724	279	170
2000–19 999	313	1 734	51	267
20 000–99 999	44	1 691	2	81
100 000+	14	12 346	0	0
Total	1 377	16 494	332	518

Sources: ABS Census data 2001 and BITRE time series estimates.

It is observed that 1285 UC/Ls (75 per cent of all UC/Ls) fell into the population size of less than 2000 people. These UC/Ls comprised of approximately 894 000 people (5.3 per cent of all residents living in UC/Ls). Of the 894 000 people, 170 000 people (1 per cent of all residents living in UC/Ls) from 279 UC/Ls (16 per cent of all UC/Ls) lived beyond the assumed access distance to regular scheduled air services.

There were 364 UC/Ls (21 per cent of all UC/Ls) with a population size between 2000 and 19 999 people. These UC/Ls comprised of approximately 2 million people (11.8 per cent of all residents living in UC/Ls). Of these 2 million people, 267 000 people (1.6 per cent of all residents living in UC/Ls) from 51 UC/Ls (3 per cent of all UC/Ls) lived beyond the assumed access distance to regular scheduled air services.

Forty-six UC/Ls (2.7 per cent of all UC/Ls) had a population size between 20 000 and 99 999 people. These UC/Ls comprised of approximately 1.7 million people (10.4 per cent of all residents living in UC/Ls). Of these 1.7 million people, 81 000 people (0.5 per cent of all residents living in UC/Ls) from two UC/Ls (0.1 per cent of all UC/Ls) lived beyond the assumed access distance to regular scheduled air services.

Fourteen UC/Ls (less than 1 per cent of all UC/Ls) fell into the population size of more than 100 000 people. These UC/Ls comprised of approximately 12 million people (73 per cent of all residents in UC/Ls). As expected, none of these UC/Ls were beyond the assumed access distance to regular scheduled air services.

See Appendix C1 for a detailed list of urban centres and localities located beyond the assumed access distance of 40 km/120 km to regular scheduled air services.

Table 4.18 shows UC/Ls and populations in UC/Ls within and beyond the assumed access distance to regular scheduled air services by states and territories in 2005. Victoria had the highest number of UC/Ls (109 UC/Ls) located beyond the assumed access distance. It also had the highest number of people (220 723 people) who lived beyond the assumed access distance. Rural Victoria has the benefit of a dense land transport network (car, coach and rail). Western Australia and Queensland also had a fairly high number of UC/Ls (79 UC/Ls) and number of people in UC/Ls (130 313 people) located beyond the assumed access distance. The Northern Territory has a lower number of UC/Ls (28 UC/Ls) and people in UC/Ls (13 796 people) that were located beyond the assumed access distance. Tasmania and the Australian Capital Territory did not have any UC/Ls located beyond the assumed access distance.

Table 4.18 Provision of regional air services to urban centres and localities within and beyond 40 km or 120 km, by state and territory, 2005

		Centres within the assumed access distance of 40 km or 120 km		*Centres beyond beyond the assumed access distance of 40 km or 120 km*	
State	*Population size*	*No. of urban centres and localities*	*Population*	*No. of urban centres and localities*	*Population*
NSW	Less than 2000	337	250 167	27	21 409
	2000–19 999	122	713 828	8	31 394
	20 000–99 999	16	520 739		
	100 000+	4	4 266 551		
	Total	479	5 751 285	35	52,803
NT	Less than 2000	24	15 769	28	13 796
	2000–19 999	7	27 594		
	20 000–99 999	3	116 557		
	100 000+				
	Total	34	159 920	28	13 796
QLD	Less than 2000	229	162 565	41	23,259
	2000–19 999	67	304 224	6	41 995
	20 000–99 999	9	454 449		
	100 000+	4	2 174 129		
	Total	309	3 095 367	47	65 254
SA	Less than 2000	100	67 727	29	18 034
	2000–19 999	25	158 604	5	17 454
	20 000–99 999	2	44 022		
	100 000+	1	1 002 127		
	Total	128	1 272 480	34	35 488
TAS	Less than 2000	81	54 780		
	2000–19 999	17	89 536		
	20 000–99 999	2	90 018		
	100 000+	1	126 048		
	Total	101	360 382		
VIC	Less than 2000	163	115 076	85	53 520
	2000–19 999	54	313 105	23	131 382
	20 000–99 999	7	281 578	1	35 828
	100 000+	2	3 290 365		
	Total	226	4 000 124	109	220 730
WA	Less than 2000	68	55 015	69	40 405
	2000–19 999	21	126 928	9	44 609
	20 000–99 999	5	183 596	1	45 299
	100 000+	1	1 176 542		
	Total	95	1 542 081	79	130 313
ACT	Less than 2000	1	351		
	2000–19 999				
	20 000–99 999				
	100 000+	1	309 799		
	Total	2	310 150		

Note: Three urban centres or localities, which are classified by the ABS Standard Geographical Classification as Other Territories, were not included in this table.

Sources: ABS Census data 2001 and BITRE time series estimates.

Most of the UC/Ls that were located beyond the assumed access distance to regular scheduled air services across the states and territories had a population size of less than 2000 people. Victoria had the highest number of small UC/Ls (with a population size of less than 2000 people) that were located beyond the assumed access distance. It also had the highest medium UC/Ls (with a population size between 2000 and 20 000) that were located beyond the assumed access distance. Other small UC/Ls located beyond the assumed access distance were sparsely scattered across New South Wales, Queensland, South Australia and Western Australia.

Based on the access distance of 120 km

Figure 4.21 is based on the assumed access distance of 120 km to some form of regular scheduled air services, regardless of the airport size.

Based on the assumed access distance of 120 km to only one airport with regular scheduled air services, 1490 UC/Ls (87.2 per cent) were located within the assumed access distance and 219 UC/Ls (12.8 per cent) were located beyond the assumed access distance (Table 4.19). Of the 219 UC/Ls located beyond the assumed access distance, 184 UC/Ls (10.8 per cent) were in a population size of less than 2000 people, 33 UC/Ls (2 per cent) were in population size between 2000 and 20 000 people and 2 UC/Ls (0.1 per cent) were in a population size between 20 000 and 100 000 people.

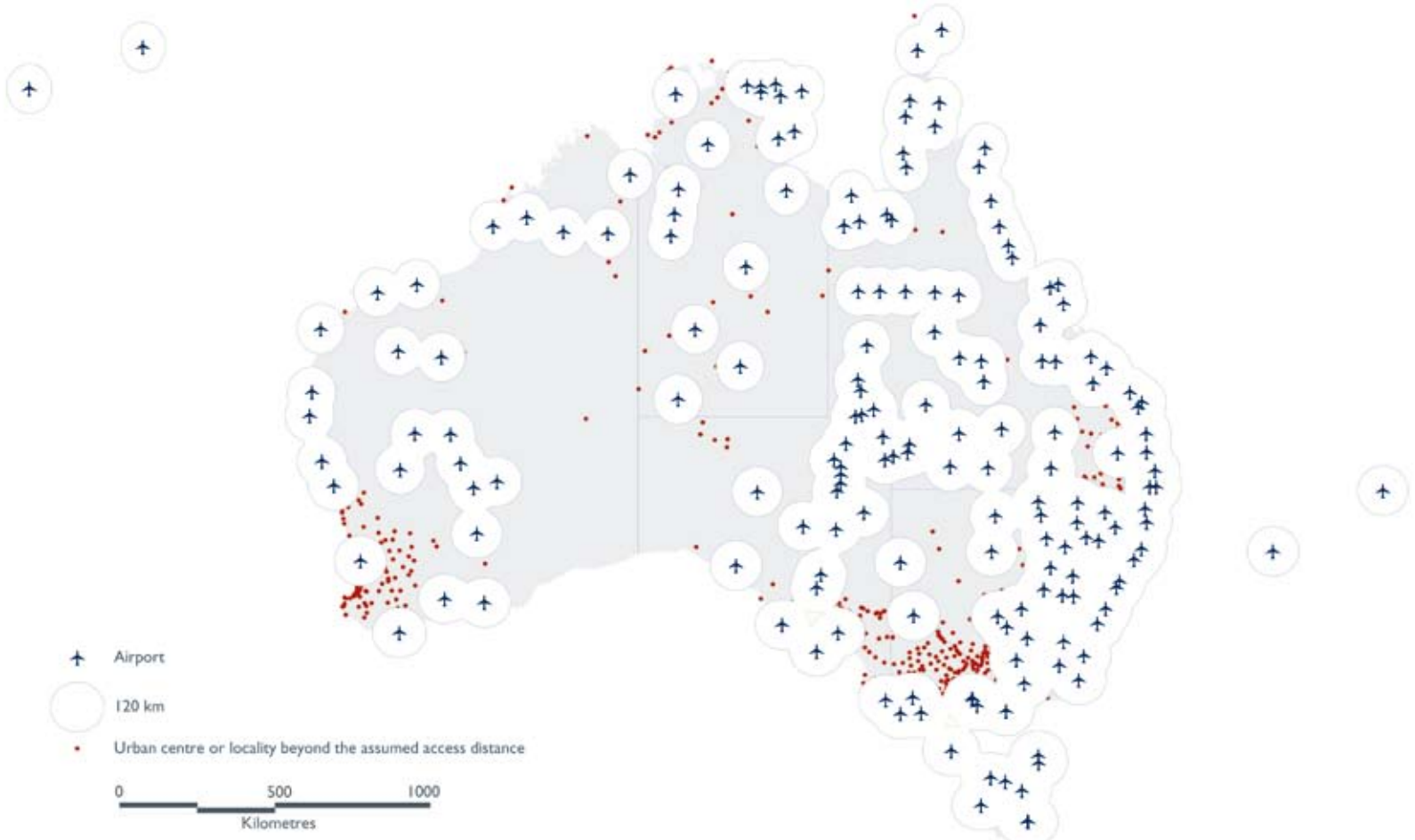
Under the assumption, a total of 16.7 million people (98 per cent) lived within the assumed access distance to regular scheduled air services (Table 4.19). Of the remaining 336 000 people living beyond the assumed access distance to regular scheduled air services, close to 113 000 people (0.6 per cent) lived in small communities of less than 2000 people, 141 000 people (0.8 per cent) lived in communities of 2000 to 20 000 people and 81 000 people (0.5 per cent) lived in communities between 20 000 to 100 000 people.

It is expected that the number of UC/Ls located within the assumed access distance to regular scheduled air services is higher under the assumed access distance of 120 km than the assumed access distance of 40 km/120 km. This is due to the geographical coverage of a 120 km circular buffer being greater than a 40 km circular buffer.

As a result of changing the assumed access distance from 40 km/120 km to just 120 km, 95 UC/Ls with a population size of less than 2000 people shifted from beyond to within the access distance to regular scheduled air services. Another 48 UC/Ls with a population size between 2000 and 20 000 people moved from beyond to within the access distance to regular scheduled air services.

Similarly, most of the decline in the number of UC/Ls located beyond the assumed access distance of 120 km across states and territories were due to the shift of UC/Ls with less than 2000 people from beyond to within the assumed access distance (Table 4.20). The shift is most prominent in Victoria.

Figure 4.21 Locations beyond the assumed access distance of 120 km to air services in Australia, 2005



Sources: ABS Census data 2001 and BITRE time series estimates.

Table 4.19 Provision of regional air services to urban centres and localities within and beyond 120 km, 2005

	Centres within the assumed access distance of 120 km		*Centres beyond the assumed access distance of 120 km*	
Population size	*No. of urban centres and localities*	*Population (thousands)*	*No. of urban centres and localities*	*Population (thousands)*
Less than 2000	1 101	781	184	113
2000–19 999	331	1 859	33	141
20 000–99 999	44	1 691	2	81
100 000+	14	12 346	0	0
Total	1 490	16 676	219	336

Source:s ABS Census data 2001 and BITRE time series estimates.

Table 4.20 Provision of regional air services to urban centres and localities within and beyond 120 km, by state and territory, 2005

		Centres within the assumed access distance of 120 km		*Centres beyond the assumed access distance of 120 km*	
State	*Population size*	*No. of urban centres and localities*	*Population*	*No. of urban centres and localities*	*Population*
NSW	Less than 2000	353	262 940	11	8 636
	2000–19 999	125	726 651	5	18 571
	20 000–99 999	16	520 739		
	100 000+	4	4 266 551		
	Total	498	5 776 881	16	27 207
NT	Less than 2000	35	20 639	17	8 926
	2000–19 999	7	27 594		
	20 000–99 999	3	116 557		
	100 000+				
	Total	45	164 790	17	8 926
QLD	Less than 2000	255	176 990	15	8 834
	2000–19 999	71	338 650	2	7 569
	20 000–99 999	9	454 449		
	100 000+	4	2 174 129		
	Total	339	3 144 218	17	16 403
SA	Less than 2000	104	71 391	29	14 370
	2000–19 999	25	158 604	29	17 454
	20 000–99 999	2	44 022		
	100 000+	1	1 002 127		
	Total	132	1 276 144	58	31 824
TAS	Less than 2000	81	54 780		
	2000–19 999	17	89 536		
	20 000–99 999	2	90 018		
	100 000+	1	126 048		
	Total	101	360 382	0	0
VIC	Less than 2000	193	133 271	54	34 700
	2000–19 999	65	391 320	12	53 167
	20 000–99 999	7	281 578	1	35 828
	100 000+	2	3 290 365		
	Total	267	4 096 534	67	123 695
WA	Less than 2000	76	58 187	62	37 598
	2000–19 999	21	126 928	9	44 609
	20 000–99 999	5	183 596	1	45 299
	100 000+	1	1 176 542		
	Total	103	1 545 253	72	127 506
ACT	Less than 2000	1	351		
	2000–19 999				
	20 000–99 999				
	100 000+	1	309 799		
	Total	2	310 150	0	0

Sources: ABS Census data 2001 and BITRE time series estimates.

4.4 Concluding observations

Overall, the difference between the analysis results based on the two assumptions is reasonably small. Generally, these analyses provided some preliminary insights to the level of accessibility to regional air services in Australia.

The focus of airport catchment analysis is on accessibility of regional air services. Obviously, the issue of adequacy of regional air services encompasses elements other than accessibility. The timeliness, frequency and 'connectivity' of other modes of transport to an airport and the condition of the road to an airport constitute some of the important elements in determining the level of adequacy in regional air services in an UC/L. It is also important to note that UC/Ls located beyond the specified access distance to air services may be well supported by other modes of public transport.

Below is a summary of findings on the accessibility of regional air services in Australia in 2005 based on the access distance of 40 km to a small or rural airport and 120 km to a medium or large airport:

- At least 97 per cent of the population (16.5 million people) who live in UC/Ls were living within the assumed access distance to some form of regular scheduled air services.
- Of the remaining 3 per cent of the population (518 000 people) who live in UC/Ls located beyond the assumed access distance to any regular scheduled air services, close to 1 per cent (170 000 people) lived in a population size of less than 2000 people, 1.6 per cent (267 000 people) lived in a population size of 1999 to 20 000 people, and 0.5 per cent (81 000 people) lived in a population size of more than 20 000 people.
- Eighty one per cent of all UC/Ls (1377 UC/Ls) were within the assumed access distance to at least one airport.
- Of the remaining 19 per cent of all UC/Ls (332 UC/Ls) located beyond the assumed access distance to any airport, 16.3 per cent (279 UC/Ls) were in a population size of less than 2000 people, 3 per cent (51 UC/Ls) were in a population size between 2000 and 20 000 people and less than 1 per cent (two UC/Ls) were in a population size between 20 000 and 100 000 people.
- At state and territory level, Victoria had the highest number of UC/Ls (109 UC/Ls) located beyond the assumed access distance to any airport. It also had the highest number of people (220 723 people) who lived beyond the assumed access distance to regular scheduled air services. Western Australia and Queensland also had fairly high number of UC/Ls (79 UC/Ls) and people in UC/Ls (130 313 people) located beyond the assumed access distance to regular scheduled air services. The Northern Territory has a lower number of UC/Ls (28 UC/Ls) and people in UC/Ls (13 796 people) located beyond the assumed access distance to regular scheduled air services. Tasmania and the Australian Capital Territory did not have any UC/Ls located beyond the assumed access distance to regular scheduled air services.

The findings from the above analyses may be interesting and useful from a national transportation policy perspective. However, they are by no means conclusive. Further analysis is needed on the availability of other modes of transports, in particular, for communities where regular scheduled air services are not always accessible.

Chapter 5

Projections of passenger movements on regional air routes

bitre

Chapter 5 Projections of passenger movements on regional air routes

5.1 Introduction

In the past, BITRE projected future trends of passenger movements for various public transport modes using a gravity model formulation (BTRE 1998, 2003). The gravity model offers an effective methodology to appraise the transport demand between geographical areas. It relies on historical origin-destination (OD) information for calibration. This means that forecasts of future trip distribution are related to the base distribution used for calibration. However, data constraints in regional areas prevented the possibility of using this approach.

With a wealth of 22 years of historical data in passenger movements on regional air routes, projections were generated using extrapolative methods. In this approach, forecasts for a series are a function solely of time and past values. This chapter outlines the procedures and assumptions used to generate the projections. It also presents the projected trends at a national level and at the level of state and territory. Estimates are presented for passenger movements on regional air routes up to the year 2016.

The projections are neither predictions nor forecasts. Instead, they are conditional projections. Rather than attempting to look for what will happen, the projections attempt to show an indicative future for passenger movements on regional air routes if the current situation is extended. In other words, the projection results are possible future trends based completely on the pattern of past trends. Assuming the continuation of past trends, the aim of these analyses is to provide a glimpse into the possible direction of future trends.

5.2 Analysis approach

Data sources

The BITRE regional air transport time series estimates covered more than 90 per cent of all data on the passenger movements on regional air routes for the past 22 years. The information is much more comprehensive than survey data and is reasonably reliable. It provides a good foundation to identify a pattern in the historical data and extrapolate trends into the future.

There are a couple of data quality issues that are worth noting. It is inevitable that a minority of the data series appeared to be intermittent and some seemed to be lacking patterns over time, particularly at the individual air route level. For these cases, projections of likely future trends may not be possible or valid.

Methodology

The projections of passenger movements on regional air routes were derived using the SAS Time Series Forecasting System. The Time Series Forecasting system forecasts future values of time series variables by extrapolating trends and patterns in the past values of the series.

The system generates forecasts by selecting the best-fitting forecasting model from a list of candidate models (see Appendix D, Section 1). The greatest strength of the Time Series Forecasting system is the wide range of forecasting models it provides to allow for the fitting of various trends (see Appendix D, Section 2). The basic process used in generating projected values involves:

- preparing and specifying the input time series data
- specifying its periodicity and creating identifications of valid time
- fitting forecasting models to each series
- producing the forecasts.

To select the best-fitting model for each time series on passenger movements, statistical and graphical features (See Appendix D, section 3) were used to select and customise forecasting models that best predict the time series.

Assumptions

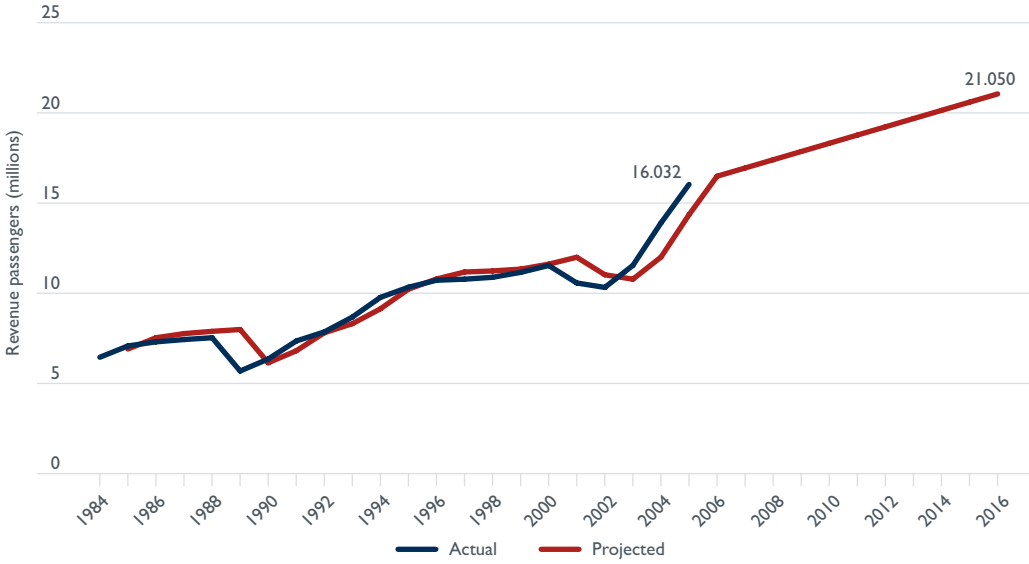
The extrapolation method assumes that a pattern, which has been established in the past, will continue and can be extended or extrapolated to provide a likely future. The method does not attempt to explain the observed past pattern. It assumes that the embedded factors that shaped the past trend will continue to operate and behave in the same way for the period of the projection. The future therefore is assumed to be a continuation of the past.

5.3 Passenger movement projections on regional air routes

5.3.1 National level

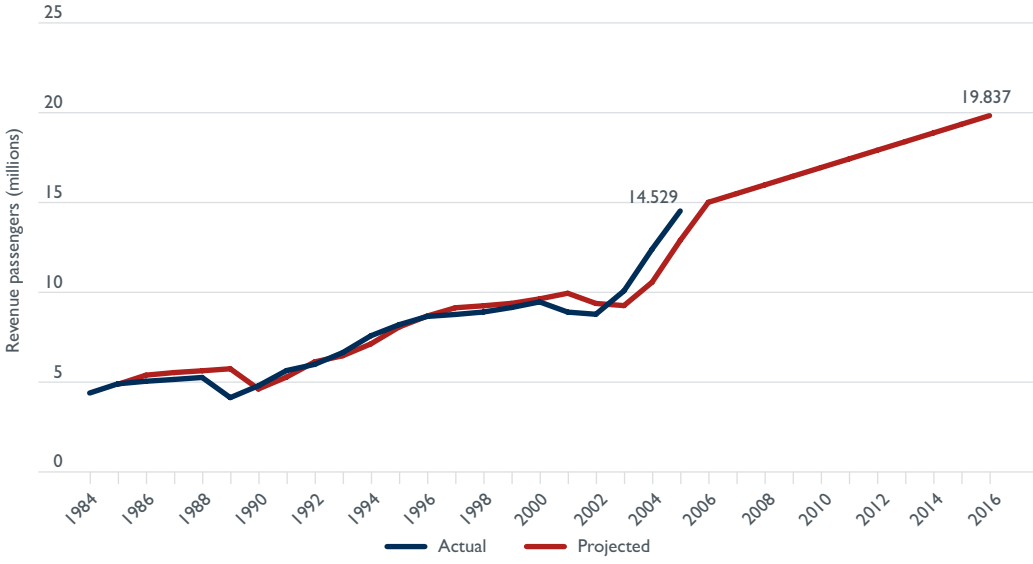
The total number of passenger movements on regional air routes is projected to grow at an average annual growth rate of 2.5 per cent, from about 16 million in 2005 to 21 million in 2016 (Figure 5.1). Total passenger movements on regional air routes between major cities and regional areas is projected to grow at an average annual growth rate of 2.9 per cent, which is above the overall projection of passenger movements on regional air routes (Figure 5.2). The traffic on these routes is projected to grow from 14.5 million in 2005 to 19.8 million in 2016. Following a prominent downward trend for the past few years, the projected growth for passenger movements on regional air routes between regional areas is projected to be about 0.01 per cent between 2005 and 2016 (Figure 5.3), with the number of passenger movements projected to increase only marginally.

Figure 5.1 Projected passenger movements on regional air routes, Australia



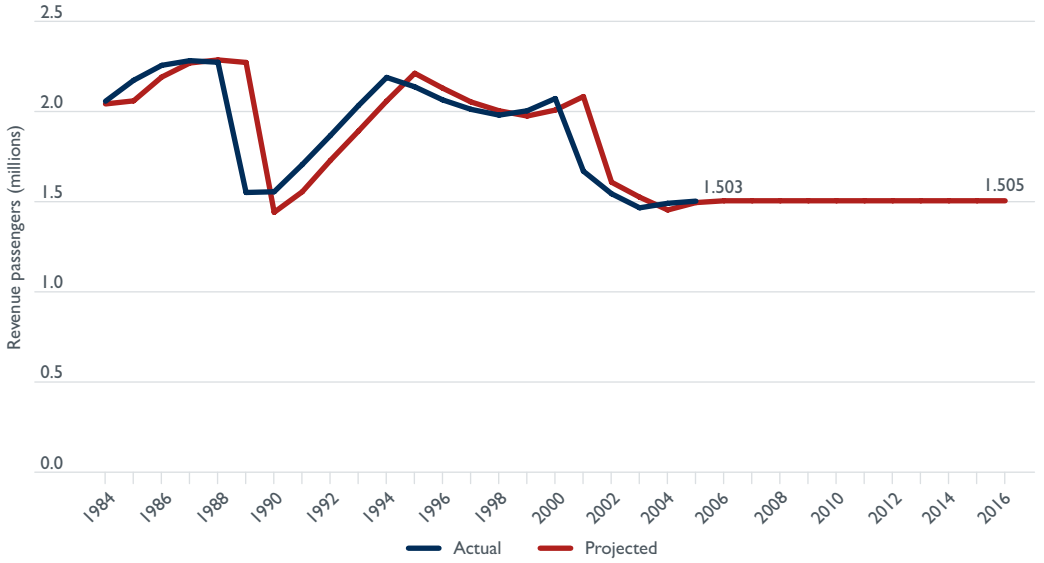
Source: BITRE time series estimates.

Figure 5.2 Projected passenger movements on air routes between major cities and regional areas, Australia



Source: BITRE time series estimates.

Figure 5.3 Projected passenger movements on air routes between regional areas, Australia



Source: BITRE time series estimates.

5.3.2 State level

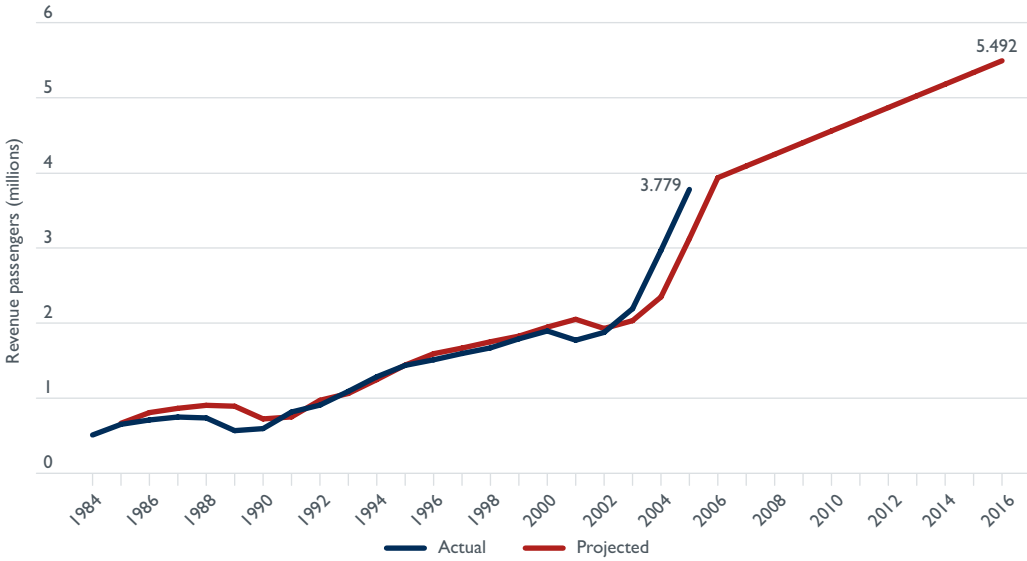
New South Wales

Figure 5.4 shows projected interstate passenger movements on regional air routes to and from New South Wales. The average annual growth rate of passenger movements on interstate regional routes is projected to be 3.5 per cent, with the number projected to increase from approximately 3.8 million in 2005 to 5.5 million in 2016.

Figure 5.5 shows that the number of intrastate passenger movements on regional air routes between major cities and regional areas in New South Wales are projected to increase from approximately 1.7 million in 2005 to 1.9 million in 2016, an average annual growth rate of 1.2 per cent.

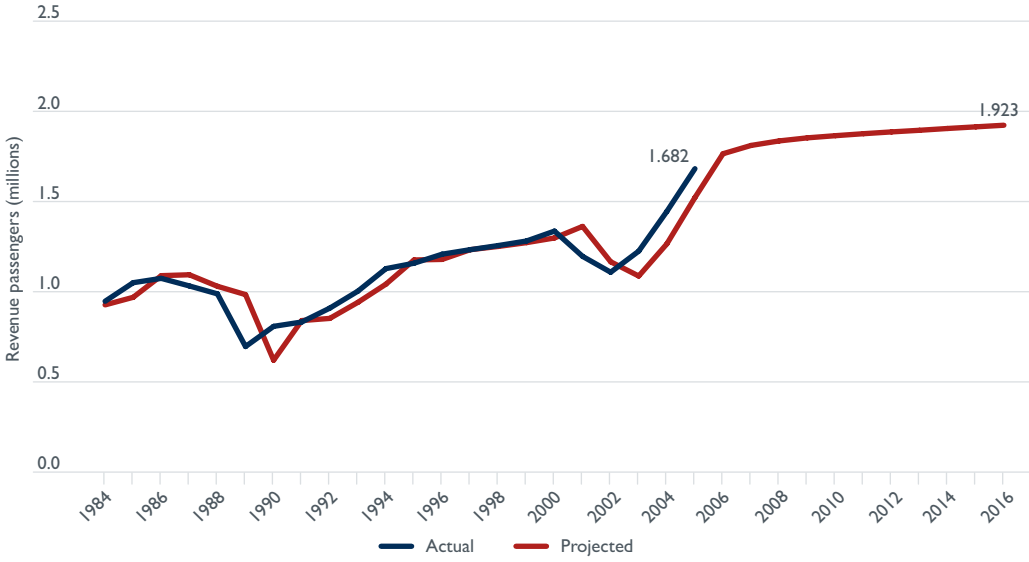
Intrastate passenger movements on regional air routes between regional areas in New South Wales is projected to increase from about 132 000 in 2005 to 147 000 in 2016, an average annual growth rate of 0.9 per cent (Figure 5.6).

Figure 5.4 Interstate: projected passenger movements on regional air routes, New South Wales



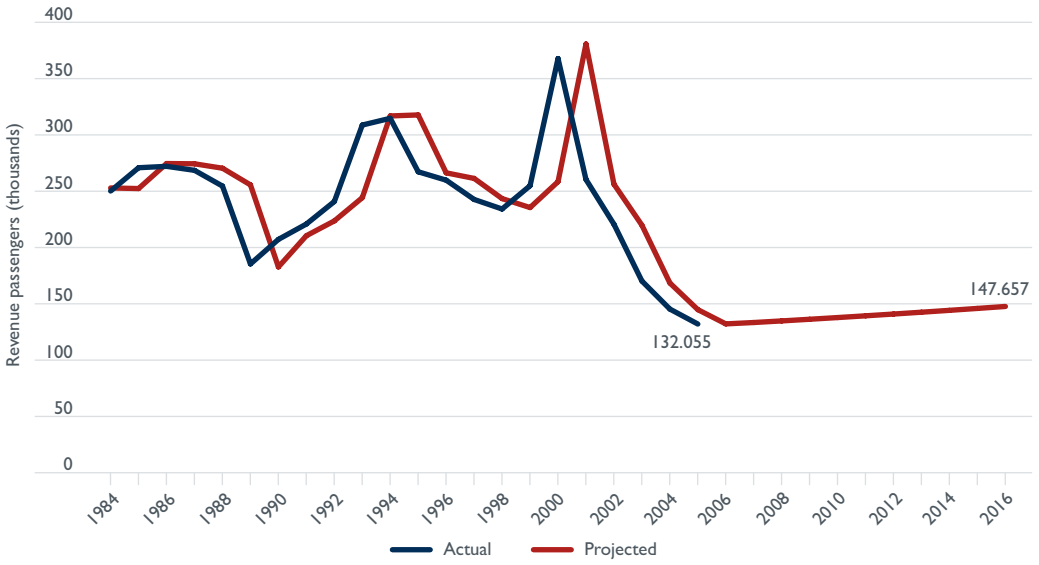
Source: BITRE time series estimates.

Figure 5.5 Intrastate: projected passenger movements on air routes between major cities and regional areas, New South Wales



Source: BITRE time series estimates.

Figure 5.6 Intrastate: projected passenger movements on air routes between regional areas, New South Wales



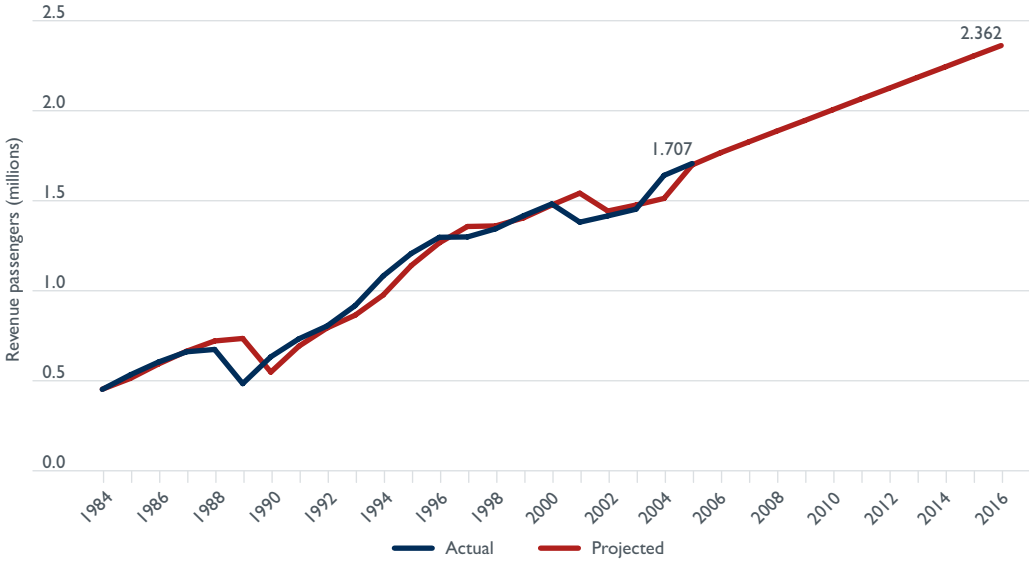
Source: BITRE time series estimates.

Northern Territory

Figure 5.7 shows the projected interstate passenger movements on regional air routes to and from the Northern Territory. The average annual growth rate of passenger movements on interstate regional routes is projected to be 3 per cent, with numbers increasing from approximately 1.7 million in 2005 to 2.4 million in 2016.

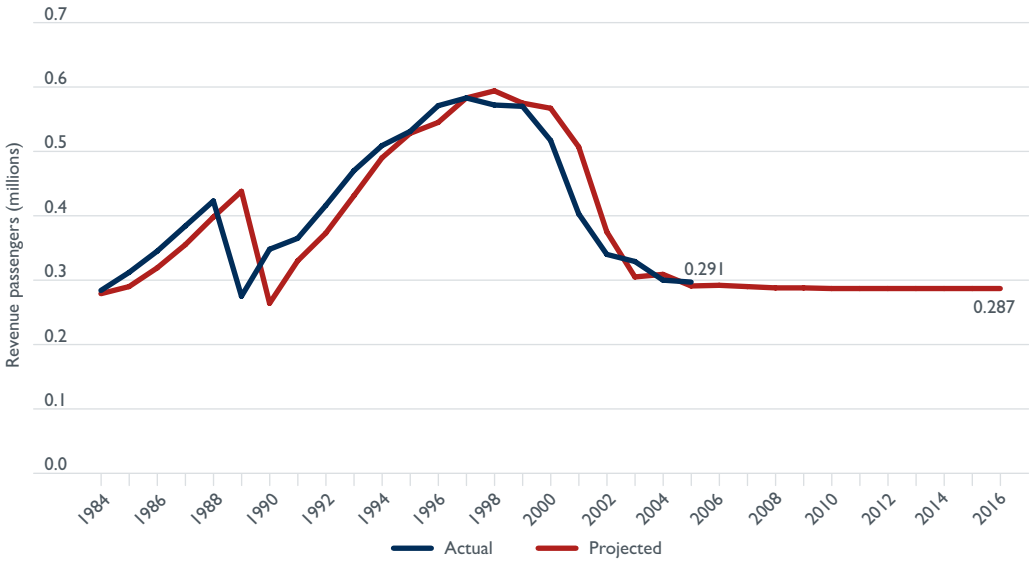
None of the regional airports in the Northern Territory are located in the major city areas under the definition of the ABS Remoteness Classification. Therefore, intrastate passenger movements in the Territory are passenger movements on regional air routes between regional areas only. Passenger movements on regional air routes between regional areas in the Northern Territory are projected to decrease marginally from about 291 000 in 2005 to 287 000 in 2016 (Figure 5.8).

Figure 5.7 Interstate: projected passenger movements on regional air routes, Northern Territory



Source: BITRE time series estimates.

Figure 5.8 Intrastate: projected passenger movements on air routes between regional areas, Northern Territory



Source: BITRE time series estimates.

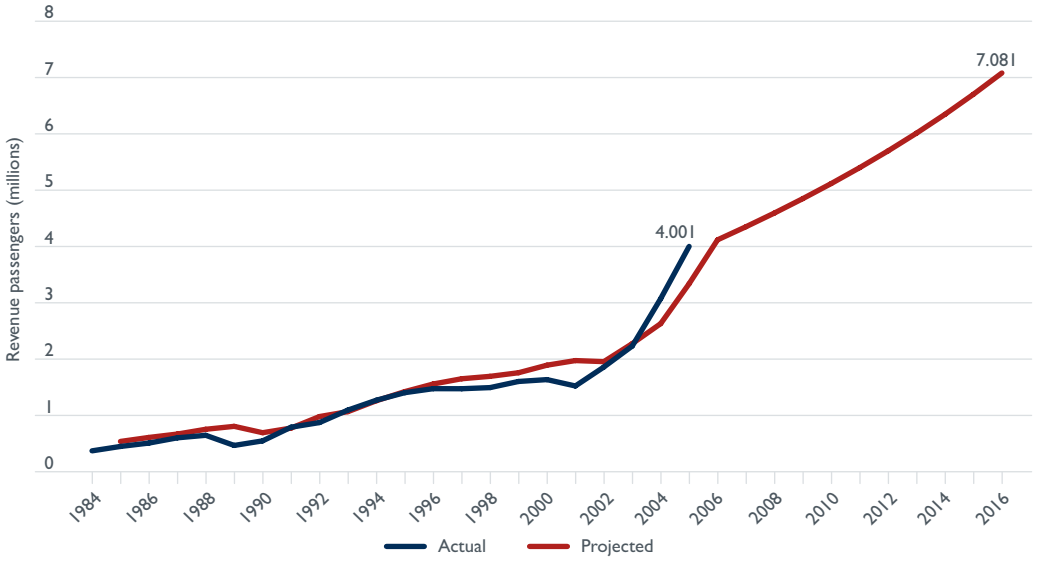
Queensland

Figure 5.9 shows the projected interstate passenger movements on regional air routes to and from Queensland. The average annual growth rate of passenger movements on interstate regional routes is projected to be 5.3 per cent, with numbers projected to increase from approximately 4 million passengers in 2005 to 7 million passengers in 2016.

Figure 5.10 shows that intrastate passenger movements on regional air routes between major cities and regional areas in Queensland are projected to increase from approximately 3.6 million in 2005 to 4.8 million in 2016, an average annual growth rate of 2.6 per cent.

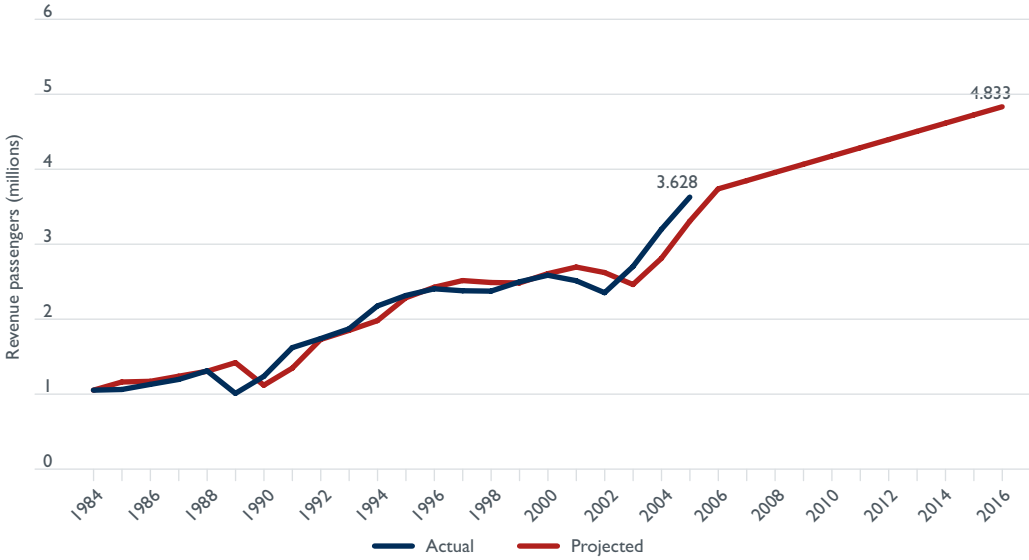
Intrastate passenger movements on regional air routes between regional areas in Queensland are projected to decline from about 588 417 in 2005 to 472 816 in 2016, an average annual growth rate of –2 per cent (Figure 5.11).

Figure 5.9 Interstate: projected passenger movements on regional air routes, Queensland



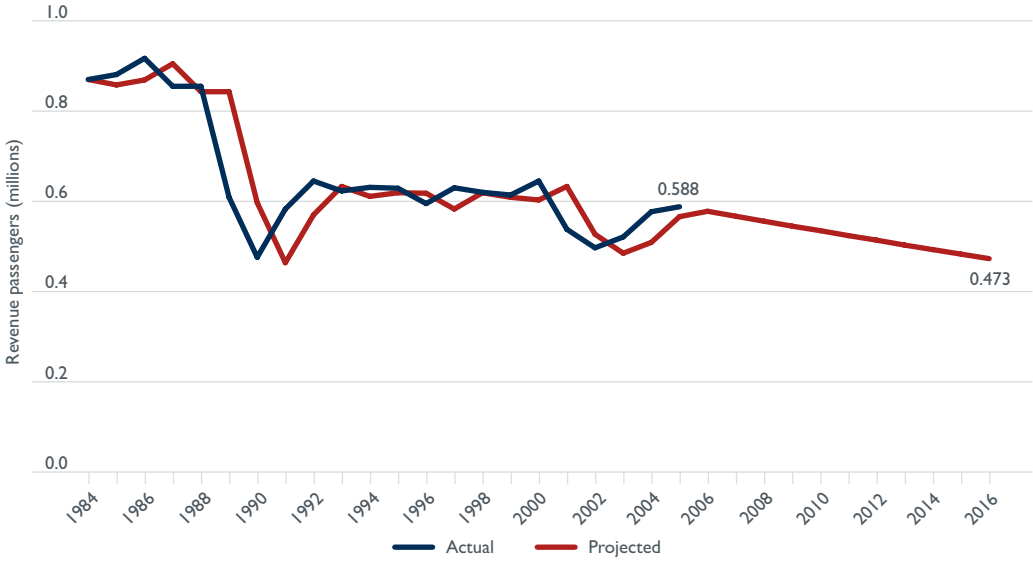
Source: BITRE time series estimates.

Figure 5.10 Intrastate: projected passenger movements on air routes between major cities and regional areas, Queensland



Source: BITRE time series estimates.

Figure 5.11 Intrastate: projected passenger movements on air routes between regional areas, Queensland



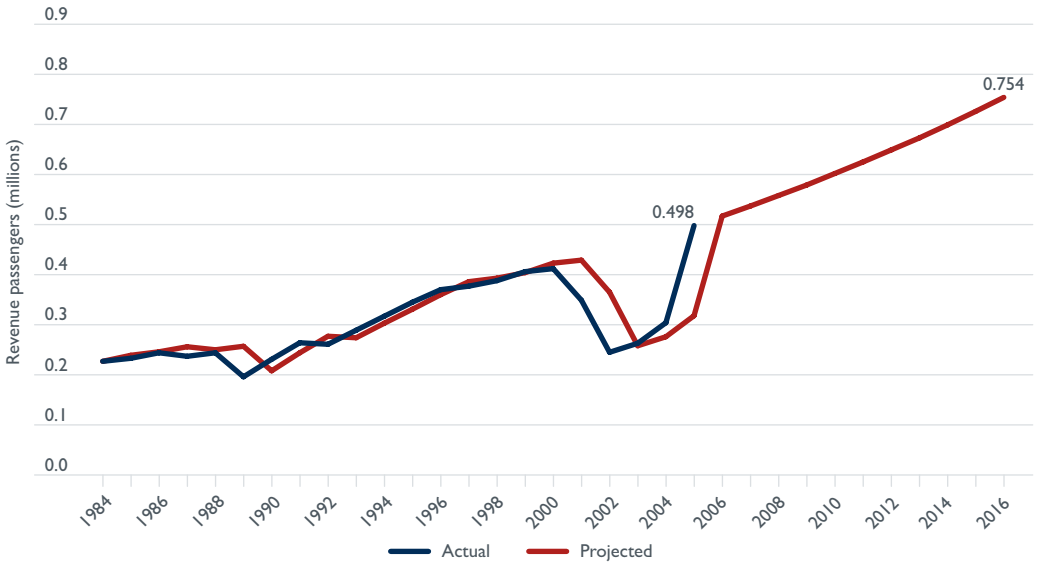
Source: BITRE time series estimates.

South Australia

Figure 5.12 shows the projected interstate passenger movements on regional air routes to and from South Australia. The average annual growth rate of passenger movements on interstate regional routes is projected to be 3.8 per cent, with numbers projected to increase from approximately half a million passengers in 2005 to three quarters of a million passengers in 2016.

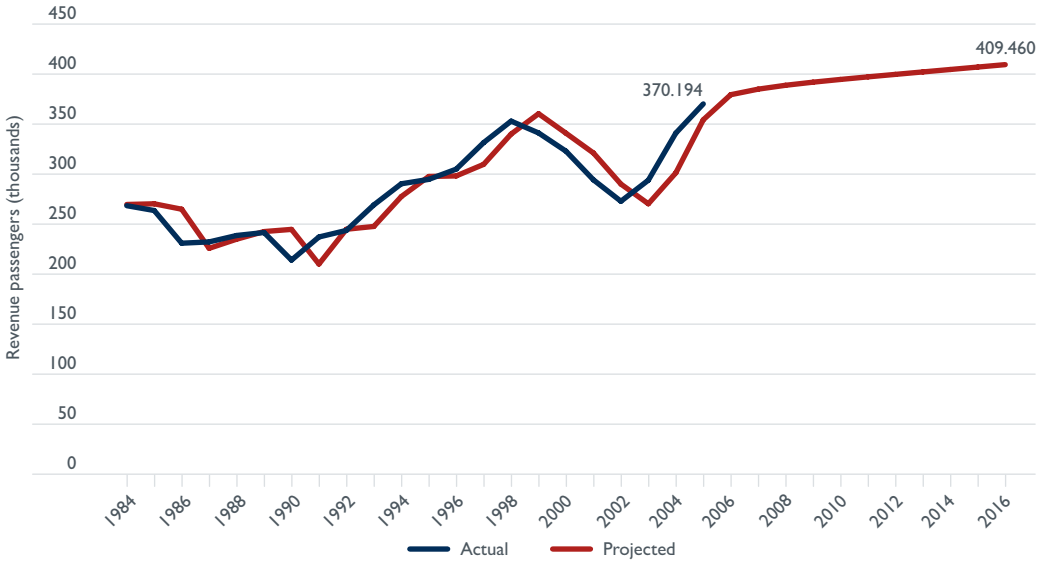
Figure 5.13 shows that intrastate passenger movements on regional air routes in South Australia are projected to increase from approximately 370 000 passengers in 2005 to 409 460 passengers in 2016, an average annual growth rate of 0.9 per cent.

Figure 5.12 Interstate: projected passenger movements on regional air routes, South Australia



Source: BITRE time series estimates.

Figure 5.13 Intrastate: projected passenger movements on air routes between regional areas, South Australia



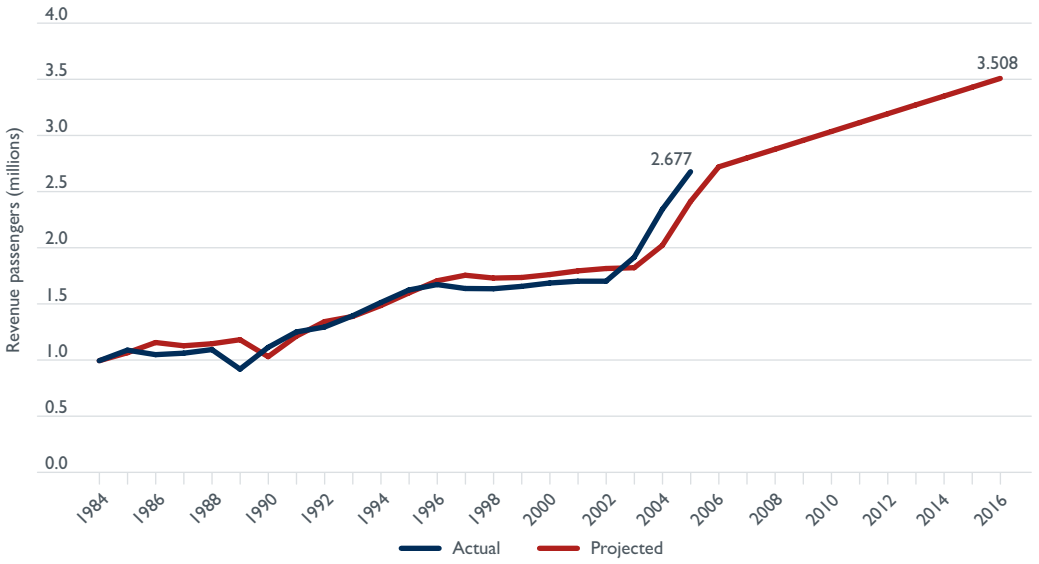
Source: BITRE time series estimates.

Tasmania

Figure 5.14 shows the projected interstate passenger movements on regional air routes to and from Tasmania. The average annual growth rate of passenger movements on interstate regional routes is projected to be 2.5 per cent per annum, with numbers projected to increase from approximately 2.7 million passengers in 2005 to 3.5 million in 2016.

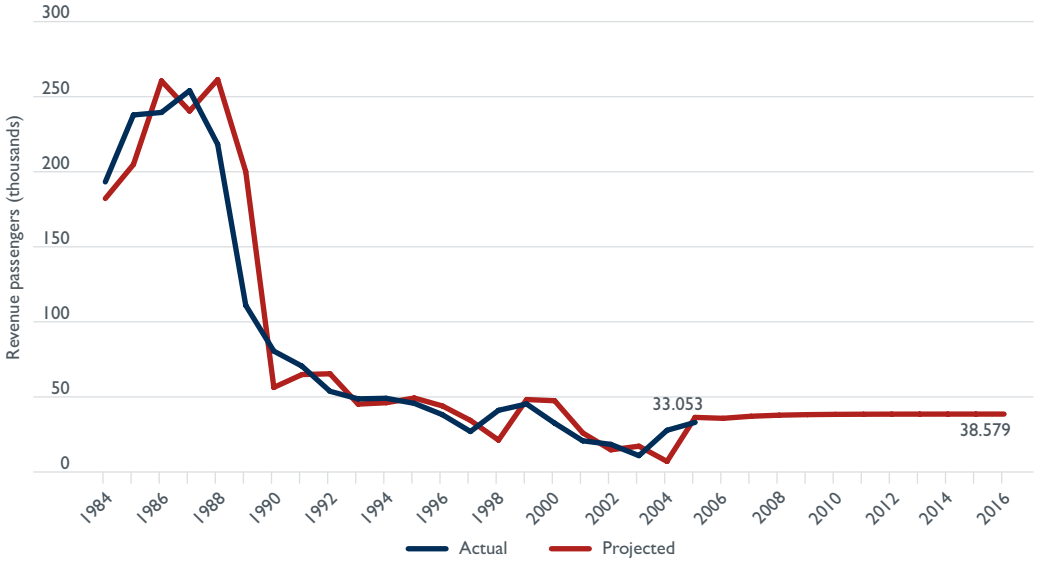
Similar to the Northern Territory, none of the regional airports in Tasmania are located in the major cities areas as defined by the ABS Remoteness Classification. Therefore, intrastate passenger movements in Tasmania are on air routes between regional areas only. Passenger movements on regional air routes between regional areas in Tasmania are projected to increase from 33 000 in 2005 to 38 000 in 2016, an average annual growth rate of 1.4 per cent (Figure 5.15).

Figure 5.14 Interstate: projected passenger movements on regional air routes, Tasmania



Source: BITRE time series estimates.

Figure 5.15 Intrastate: projected passenger movements on air routes between regional areas, Tasmania



Source: BITRE time series estimates.

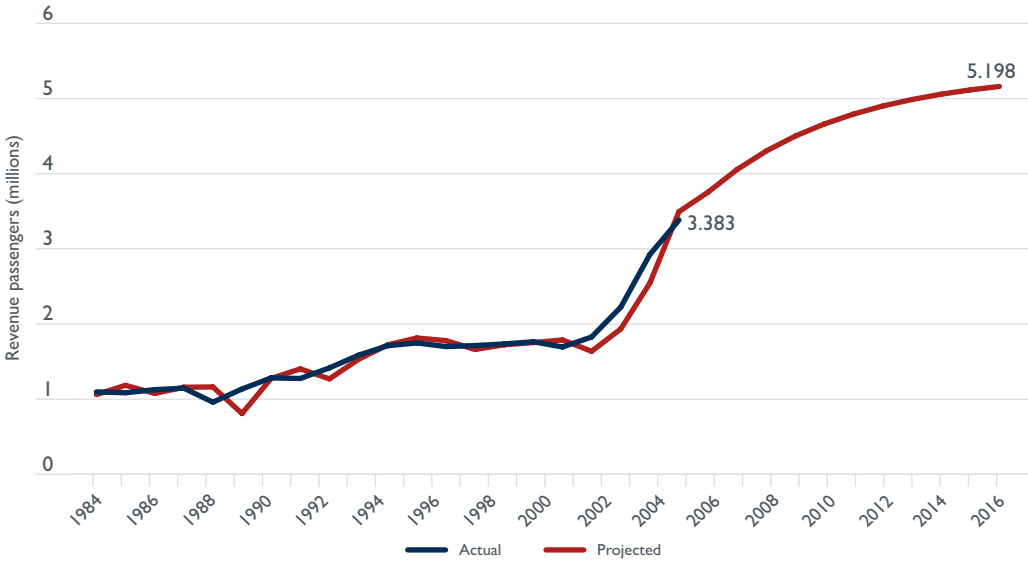
Victoria

Figure 5.16 shows the projected interstate passenger movements on regional air routes to and from Victoria. The average annual growth rate of passenger movements on the Victoria interstate regional route is projected to be 3.9 per cent, with numbers

projected to increase from approximately 3.4 million passengers in 2005 to 5.2 million passengers in 2016.

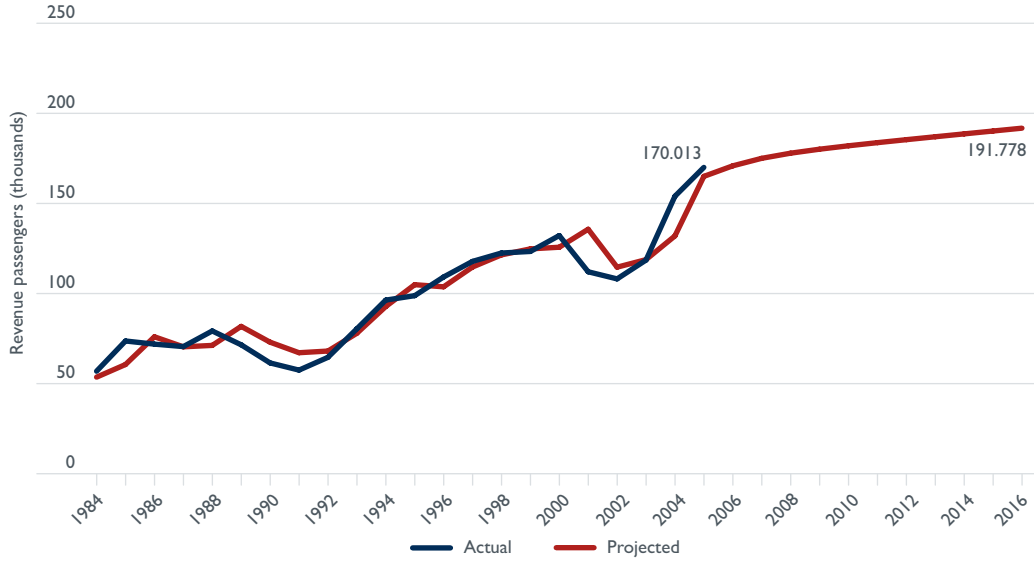
Figure 5.17 shows that intrastate passenger movements on regional air routes in Victoria are projected to increase from approximately 170 000 passengers in 2005 to 191 000 passengers in 2016, an average annual growth rate of 1.1 per cent.

Figure 5.16 Interstate: projected passenger movements on regional air routes, Victoria



Source: BITRE time series estimates.

Figure 5.17 Intrastate: projected passenger movements on air routes between regional areas, Victoria



Source: BITRE time series estimates.

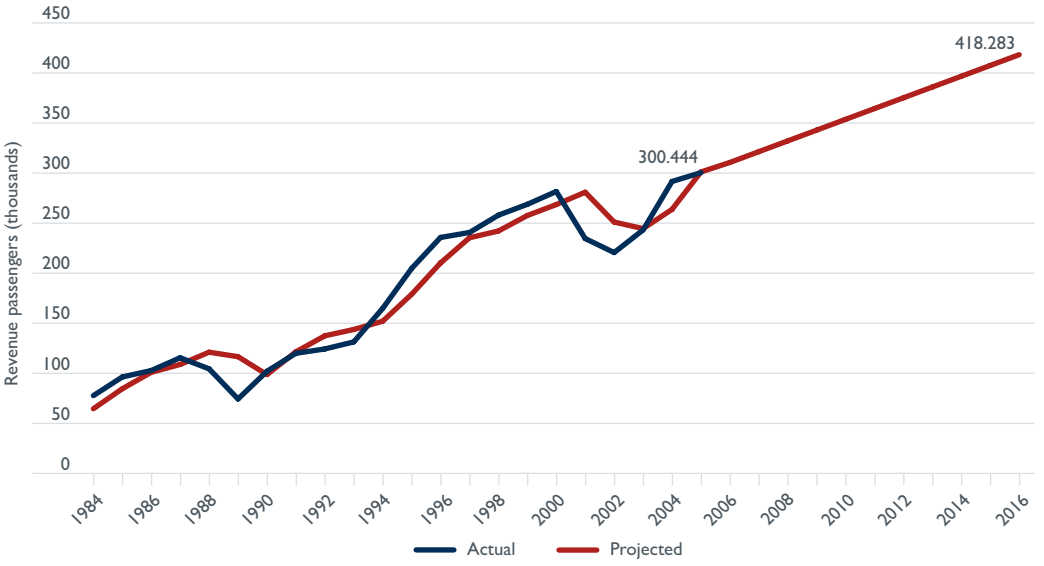
Western Australia

Figure 5.18 shows the projected interstate passenger movements on regional air routes to and from Western Australia. The average annual growth rate of passenger movements on interstate regional routes is projected to be 3 per cent, with numbers projected to increase from approximately 300 000 in 2005 to 418 000 in 2016.

Figure 5.19 shows that intrastate passenger movements on regional air routes between major cities and regional areas in Western Australia is projected to increase from approximately 1.2 million in 2005 to 1.5 million in 2006, an average annual growth rate of 2.1 per cent.

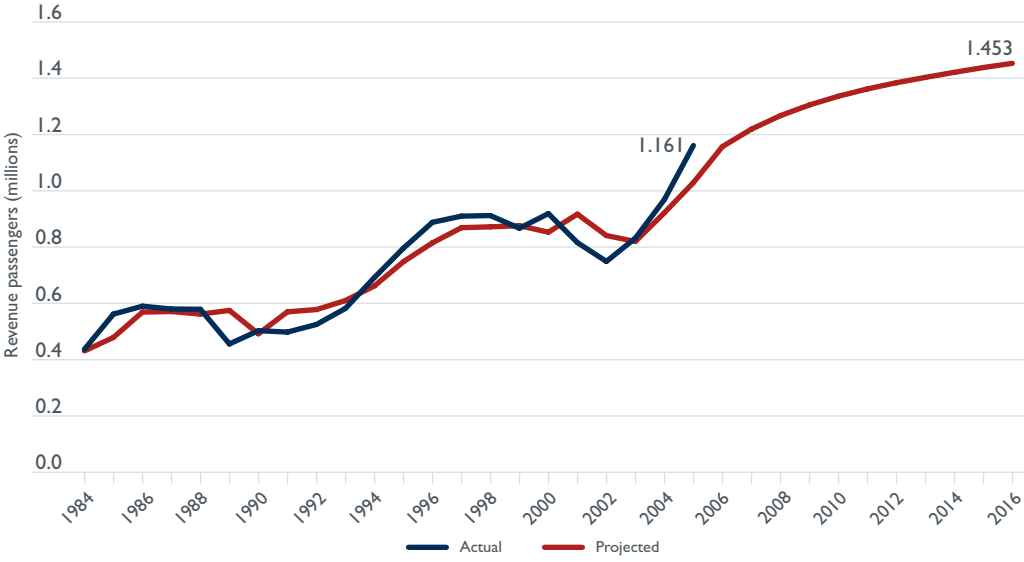
Intrastate passenger movements on regional air routes between regional areas in Western Australia are projected to decline from about 73 000 passengers in 2005 to 70 000 passengers in 2016, an average annual growth rate of –0.4 per cent (Figure 5.20).

Figure 5.18 Interstate: projected passenger movements on regional air routes, Western Australia



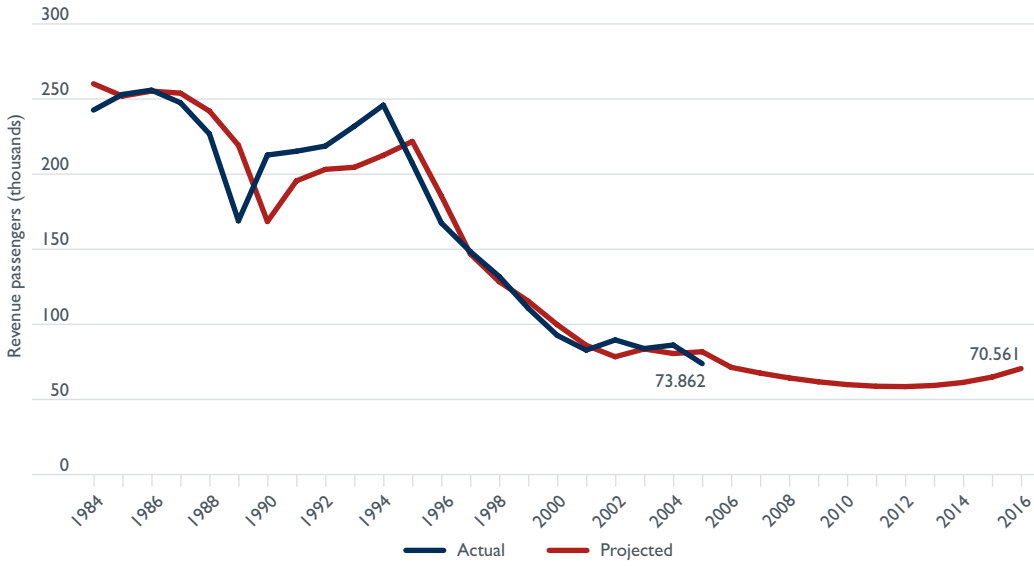
Source: BITRE time series estimates.

Figure 5.19 Intrastate: projected passenger movements on air routes between major cities and regional areas, Western Australia



Source: BITRE time series estimates.

Figure 5.20 Intrastate: projected passenger movements on air routes between regional areas, Western Australia

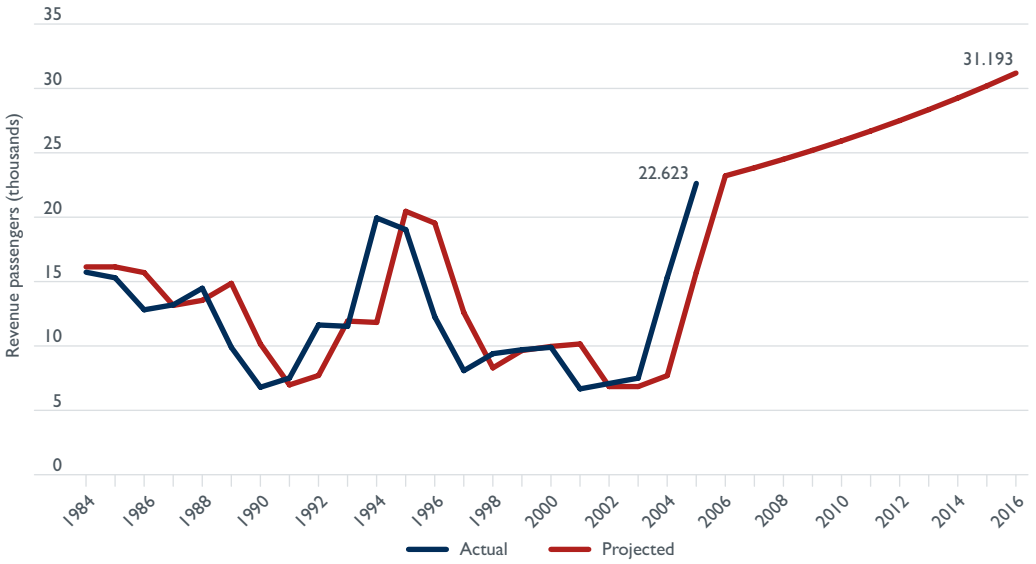


Source: BITRE time series estimates.

Australian Capital Territory

Figure 5.21 shows the projected interstate passenger movements on regional air routes to and from the Australian Capital Territory. The average annual growth rate of passenger movements on Australian Capital Territory interstate regional routes is projected to be 3 per cent per annum, with numbers projected to increase from approximately 23 000 in 2005 to 31 000 in 2016.

Figure 5.21 Interstate: projected passenger movements on regional air routes, Australian Capital Territory



Source: BITRE time series estimates.

5.4 Passenger movement projections on individual regional air routes

Summarised results

Passenger movements are also projected to 2016 for each individual regional air route existing in 2005. Out of the 415 routes in 2005, 203 routes are projected to have a positive trend in passenger traffic, 76 routes are projected to show a marginal if not stagnant trend in passenger growth, 79 routes are projected to show a declining trend in passenger traffic, and 57 routes contained inadequate time series data for reasonable projections.

Table 5.1 shows all interstate routes where projected passenger movements on regional air routes exhibit a negative future trend. As shown, most of the interstate air routes with projected passenger movements on the decline were between airports of large to medium size (Table 5.1).

Table 5.1 Interstate: regional air routes with projected passenger movements on the decline, 2005 to 2016

Airport 1	*State 1*	*Airport class 1*	*Airport 2*	*State 2*	*Airport class 2*
Adelaide	SA	Large	Alice Springs	NT	Large
Melbourne	VIC	Large	Burnie	TAS	Medium
Ayers Rock	NT	Large	Perth	WA	Large
Rockhampton	QLD	Large	Sydney	NSW	Large
Darwin	NT	Large	Kununurra	WA	Medium
King Island	TAS	Small	Moorabbin	VIC	Large
Brisbane	QLD	Large	Tamworth	NSW	Medium
Brisbane	QLD	Large	Port Macquarie	NSW	Medium
Adelaide	SA	Large	Launceston	TAS	Large
Adelaide	SA	Large	Kalgoorlie	WA	Large
Ayers Rock	NT	Large	Townsville	QLD	Large
Canberra	ACT	Large	Wagga Wagga	NSW	Medium
Ayers Rock	NT	Large	Broome	WA	Large

Source: BITRE time series estimates.

Table 5.2 shows all intrastate routes by state and territory where projected passenger movements on regional air routes exhibit a negative future trend. As shown, more intrastate routes with projected passenger movement on decline were between airports of smaller sizes.

Table 5.2 Intrastate: regional air routes with projected passenger movements on the decline, by state and territory, 2005 to 2016

State	*Airport 1*	*Airport class 1*	*Airport 2*	*Airport class 2*
NSW	Cooma	Small	Sydney	Large
	Coffs Harbour	Large	Port Macquarie	Medium
	Albury	Large	Wagga Wagga	Medium
	Mudgee	Rural	Sydney	Large
	Coonamble	Rural	Dubbo	Large
	Coonamble	Rural	Walgett	Rural
	Bathurst	Small	Orange	Medium
	Lightning Ridge	Rural	Walgett	Rural
	Coffs Harbour	Large	Ballina	Large
	Lord Howe Island	Small	Port Macquarie	Medium
	Broken Hill	Small	Sydney	Large
	Coonabarabran	Rural	Gunnedah	Small
	Orange	Medium	West Wyalong	Rural
	Cobar	Rural	Sydney	Large
	Dubbo	Large	Mudgee	Rural
NT	Alice Springs	Large	Darwin	Large
	Gove	Medium	Groote Eylandt	Small
	Darwin	Large	McArthur River	Small
	Elcho Island	Small	Gove	Medium
	Alice Springs	Large	Tennant Creek	Rural
	Elcho Island	Small	Ramingining	Rural
	Gove	Medium	Lake Evella	Rural
	Elcho Island	Small	Lake Evella	Rural
	Darwin	Large	Katherine-Tindal	Rural
	Milingimbi	Small	Ramingining	Rural
	Groote Eylandt	Small	Numbulwar	Rural
	Katherine-Tindal	Rural	Tennant Creek	Rural
	Lake Evella	Rural	Ramingining	Rural
QLD	Mackay	Large	Rockhampton	Large
	Cairns	Large	Dunk Island	Small
	Brisbane	Large	Thangool	Small
	Brisbane	Large	Maroochydore	Large
	Cairns	Large	Lizard Island	Rural
	Cairns	Large	Mount Isa	Medium
	Cairns	Large	Karumba	Rural
	Brisbane	Large	Oakey	Rural
	Bundaberg	Medium	Gladstone	Medium
	Quilpie	Rural	Windorah	Rural
	Hughenden	Rural	Richmond	Rural
	Birdsville	Rural	Windorah	Rural
	Julia Creek	Rural	Richmond	Rural
	Cunnamulla	Rural	Thargomindah	Rural
	Rockhampton	Large	Townsville	Large
	Maroochydore	Large	Gold Coast	Large
	Barcaldine	Rural	Emerald	Medium
	Hervey Bay	Medium	Rockhampton	Large

(continued)

Table 5.2 Intrastate: regional air routes with projected passenger movements on the decline, by state and territory, 2005 to 2016 (continued)

State	*Airport 1*	*Airport class 1*	*Airport 2*	*Airport class 2*
SA	Leigh Creek	Rural	Port Augusta	Rural
TAS	King Island	Small	Burnie	Medium
	Hobart	Large	Launceston	Large
WA	Broome	Large	Kununurra	Medium
	Karratha	Large	Port Hedland	Medium
	Carnarvon	Small	Geraldton	Medium
	Meekatharra	Rural	Perth	Large
	Paraburdoo	Medium	Newman	Medium
	Leonora	Rural	Perth	Large
	Mount Magnet	Rural	Perth	Large
	Broome	Large	Derby-Curtin	Rural
	Carnarvon	Small	Learmonth	Small
	Broome	Large	Port Hedland	Medium
	Karratha	Large	Paraburdoo	Medium
	Broome	Large	Newman	Medium
	Kununurra	Medium	Paraburdoo	Medium
	Learmonth	Small	Port Hedland	Medium
	Paraburdoo	Medium	Port Hedland	Medium
	Albany	Medium	Esperance	Small
	Karratha	Large	Learmonth	Small

Source: BITRE time series estimates.

Table 5.3 (interstate) and 5.4 (intrastate) show the projected routes that will see a stagnant trend in future. Similarly, there are more intrastate than interstate regional air routes that are projected to experience a stagnant trend.

Table 5.3 Interstate: regional air routes with projected stagnant trends in passenger movements, 2005 to 2016

Airport 1	*State 1*	*Airport class 1*	*Airport 2*	*State 2*	*Airport class 2*
Darwin	NT	Large	Melbourne	VIC	Large
Devonport	TAS	Medium	Melbourne	VIC	Large
Broome	WA	Large	Darwin	NT	Large
Canberra	ACT	Large	Williamtown	NSW	Large
Mount Gambier	SA	Medium	Portland	VIC	Small
Albury	NSW	Large	Canberra	ACT	Large
Mount Hotham	VIC	Rural	Sydney	NSW	Large
Griffith	NSW	Medium	Mildura	VIC	Medium
Ayers Rock	NT	Large	Mount Isa	QLD	Medium
Ayers Rock	NT	Large	Kalgoorlie	WA	Large
Kalgoorlie	WA	Large	Sydney	NSW	Large
Brisbane	QLD	Large	Kalgoorlie	WA	Large
Kalgoorlie	WA	Large	Melbourne	VIC	Large
Mildura	VIC	Medium	Sydney	NSW	Large
Canberra	ACT	Large	Launceston	TAS	Large
Birdsville	QLD	Rural	Cordillo Downs	SA	Rural
Durham Downs	QLD	Rural	Innamincka	SA	Rural

Source: BITRE time series estimates.

Table 5.4 Intrastate: regional air routes with projected stagnant trends in passenger movements, by state and territory, 2005 to 2016

State	*Airport 1*	*Airport class 1*	*Airport 2*	*Airport class 2*
NSW	Albury	Large	Sydney	Large
	Sydney	Large	Taree	Small
	Grafton	Rural	Taree	Small
	Lismore	Medium	Ballina	Large
	Grafton	Rural	Inverell	Rural
	Moree	Small	Tamworth	Medium
	Narrabri	Small	Tamworth	Medium
	Port Macquarie	Medium	Ballina	Large
	Bourke	Rural	Dubbo	Large
	Dubbo	Large	Lightning Ridge	Rural
NT	Lake Evella	Rural	Milingimbi	Small
	Darwin	Large	Elcho Island	Small
	Gove	Medium	Milingimbi	Small
	Alice Springs	Large	Katherine-Tindal	Rural
QLD	Mount Isa	Medium	Townsville	Large
	Blackwater	Small	Emerald	Medium
	Cairns	Large	Normanton	Small
	Doomadgee	Small	Mount Isa	Medium
	Cairns	Large	Kowanyama	Rural
	Cairns	Large	Iron Range	Rural
	Doomadgee	Small	Mornington Island	Small
	Burketown	Rural	Mornington Island	Small
	Edward River	Rural	Kowanyama	Rural
	Brisbane	Large	Charleville	Small
	Cairns	Large	Coen	Rural
	Maryborough	Medium	Maroochydore	Large
	Mount Isa	Medium	Julia Creek	Rural
	Hamilton Island	Large	Townsville	Large
	Cairns	Large	Gold Coast	Large
	Cairns	Large	Maroochydore	Large
	Emerald	Medium	Rockhampton	Large
	Maroochydore	Large	Rockhampton	Large
	Hamilton Island	Large	Proserpine	Large
	Boulia	Rural	Birdsville	Rural
	Bedourie	Rural	Glengyle	Rural
	Birdsville	Rural	Roseberth	Rural
SA	Coober Pedy	Rural	Whyalla	Medium
	Clifton Hills	Rural	Cowarie	Rural
	Cowarie	Rural	Mungaranie	Rural
	Ceduna	Small	Port Lincoln	Medium
	Dulkaninna	Rural	Etadunna	Rural
	Dulkaninna	Rural	Leigh Creek	Rural
	Leigh Creek	Rural	Moolawatana	Rural
	Etadunna	Rural	Mulka	Rural
	Mulka	Rural	Mungaranie	Rural

(continued)

Table 5.4 Intrastate: regional air routes with projected stagnant trends in passenger movements, by state and territory, 2005 to 2016 (continued)

State	*Airport 1*	*Airport class 1*	*Airport 2*	*Airport class 2*
TAS	Flinders Island	Small	Launceston	Large
	Devonport	Medium	Burnie	Medium
	Hobart	Large	Burnie	Medium
	Cape Barren Island	Rural	Launceston	Large
VIC	Melbourne	Large	Portland	Small
	Hamilton	Rural	Warrnambool	Small
	Melbourne	Large	Mount Hotham	Rural
WA	Cocos Island	Small	Christmas Island	Small
	Perth	Large	Wiluna	Rural
	Laverton	Rural	Perth	Large
	Broome	Large	Learmonth	Small
	Leinster	Rural	Leonora	Rural
	Esperance	Small	Kalgoorlie	Large
	Karratha	Large	Newman	Medium

Source: BITRE time series estimates.

5.5 Concluding observations

The projections are useful in providing an additional strand in policy development related to regional aviation. The information can play a useful role in informing decisions about which segments of the market are facing challenges in retaining commercial air services. With the indicative directions for passenger movements on regional air routes, future trends can be shaped by different policy choices.

The projected results presented in this chapter are entirely based on past trends. They illustrate a future that anticipates no changes or discrepancies from the past. The reality is unlikely to be as simple. There are many uncertainties which may cause future trends to deviate from the past. Changes in economic conditions may significantly change travel behaviour and therefore the course of trends in different segments of regional air routes. Strategic behaviour by airlines may also impact on the short or long-term pattern of passenger movements on regional air routes. Continuing policy development will also affect the future trends in passenger movements between regional airports. The extrapolative method used for the projections does not attempt to explain factors behind the projected trends. Any differing patterns in key determinants of air travel on regional air routes will inevitably alter the projections.

Bearing these caveats in mind, a summary of general findings on the projection of passenger movements on regional air routes in Australia from 2005 to 2016 is as follows:

- *Interstate regional air routes:* With the exception of Queensland and Tasmania, passenger movements in most states and territories are projected to grow at an average annual growth rate of 3 per cent to 4 per cent between 2005 and 2016. Queensland is projected to see an average annual growth rate of 5.3 per cent, while Tasmania is projected to see a lower average annual growth rate of 2.5 per cent in passenger movements on interstate regional air routes.

- *Intrastate regional air routes:* All states and territories are projected to experience a substantial increase in average annual growth rates in passenger movements on intrastate regional air routes between major cities and regional areas. In Queensland, passenger movements on intrastate air routes between major cities and regional areas are projected to grow by an average of 2.6 per cent per annum. However, passenger movements on intrastate air routes between regional areas are projected to decline by an average of 2 per cent per annum. Similarly, in Western Australia, passenger movements on intrastate air routes between major cities and regional areas are projected to grow by an average of 2.1 per cent, while passenger movements on intrastate air routes between regional areas are projected to decline by an average of 0.4 per cent per annum. Broadly, all other states and territories are projected to experience an average annual growth rate of around 1 per cent in passenger movements on intrastate regional air routes.

Chapter 6

Air services in regional communities

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Chapter 6 Air services in regional communities

6.1 Introduction

The adequacy of air services to small and rural regional airports has always been of particular interest to policy makers. In Chapter 2, it was shown that the decline in the number of regional airports was largely attributed to the decline in the number of rural airports. Most of these rural airports are in very remote Australia. The limited level of air services provided to these communities is often associated with their small population base. In addition, factors such as level of economic activity, proximity to larger airports and/or the availability of other modes of transport may also limit airline entry at airports serving small and rural communities. The association between these factors and the level of air services a community receives is tied to a complex set of interconnected social and economic factors. The pattern of socio-demographic profiles of communities with or without close access to air services is often shaped by a dynamic process. That process has been driven by a combination of major or gradual social, economic, demographic, technological and political transformations over the years. These economic and social changes across Australia have impacted differentially on localities (Baum, S. et al. 1999).

This chapter explores the fundamental associations between the distribution of population in urban centres and localities (UC/Ls) by airport size (based on airport classification)[9] and some key socio-demographic factors[10]. The analyses in the following sections are based on the spatial analysis assumptions outlined in Chapter 4. The population and UC/Ls numbers were estimated using the assumed distance of 40 km radius from small and rural airports and 120 km radius from large and medium airports. It was also assumed that if a UC/L is located within the access distance of two or more airports of different sizes, the UC/L is categorised as a location with access to the largest airport within the assumed access distance.

As discussed in section 1.6, regional airports are categorised into sizes (i.e. large, medium, small and rural) according to annual passenger movements. In 2005, there were 20 large regional airports, 31 medium regional airports, 38 small airports and 82 rural airports serving in regional areas (Figure 6.1). It is worth noting that, while the small and rural regional airports are large in numbers, passenger movements from these airports constituted only 5.65 per cent of the total number of passenger movement at all regional airports in 2005. Using the data from 2005, the following analyses examine how various key factors were associated with the distribution of population and UC/Ls by airport size.

9. Airport classification is assigned to each regional airport based on passenger movement data from 2005.
10. The socio-demographic data was based on a customised table requested from the ABS census data 2001. Four variables by UC/Ls were provided. They are population, mean individual weekly income, mean individual weekly manufacturing income and labour force status (employment).

Figure 6.1 Regional airports by airport classification, 2005

Source: BITRE time series estimates.

6.2 Selected socio-demographic distributions based on airport classification

Demography

As in Chapter 4, the population and the UC/L numbers were stratified into four population sizes (Table 6.1). The smallest population size consists of those who lived in UC/Ls with less than 2000 people. This population size is of particular interest as they are considered to be 'medium to small communities'.

Table 6.1 presents the distribution of population in UC/Ls by population size. Of all the population who lived in UC/Ls, 5.3 per cent had a population size of less than 2000 people, 11.8 per cent had a population size between 2000 and 20 000 people, 10.4 per cent had a population size between 20 000 and 100 000 people and 72.57 per cent had a population size of more than 100 000 people.

Table 6.1 Distribution of population in UC/Ls, by population size, 2005

Population size	*Less than 2000*	*2000–19 999*	*20 000–99 999*	*100 000+*	*Total*
Persons	894 002	2 000 653	1 772 086	12 345 561	17 012 302
Percentage	5.26	11.76	10.42	72.57	100.00

Source: BITRE time series estimates.

Table 6.2 presents the distribution of UC/Ls by population size. It is observed that 1285 UC/Ls (75.2 per cent) were in the population size of less than 2000 people; 364 UC/Ls (21.3 per cent) were in the population size 2000 to 20 000 people; 46 UC/Ls (2.7 per cent) were in the population size between 20 000 and 100 000 people; and only 14 UC/Ls (0.82 per cent) were in a population size of more than 100 000 people.

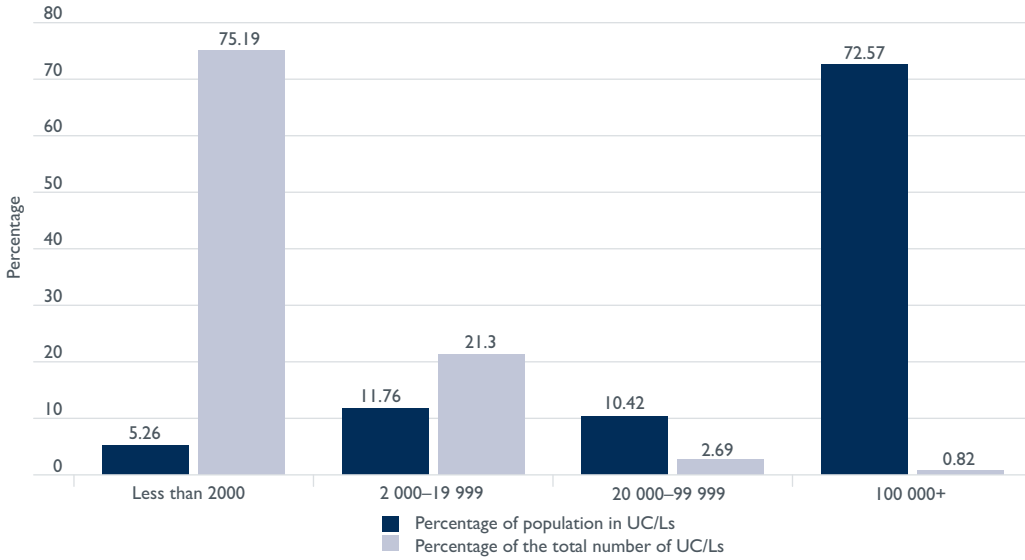
Table 6.2 Distribution of UC/Ls, by population size, 2005

Distribution of UC/Ls	*Less than 2000*	*2000–19 999*	*20 000–99 999*	*100 000+*	*Total*
Number of UC/Ls	1 285	364	46	14	1 709
Percentage	75.19	21.3	2.69	0.82	100.00

Source: BITRE time series estimates.

The sparseness of the settlement pattern in regional Australia is clearly displayed in Figure 6.2. The number of UC/Ls was by far the highest in the population size of less than 2000 people. Around 5.3 per cent of the total population in UC/Ls were scattered across 75 per cent of all UC/Ls (1285 UC/Ls). Each of these 1285 UC/Ls has a population size of less than 2000 people. The remaining 94.7 per cent of the UC/L population was distributed across 25 per cent of all UC/Ls (424 UC/Ls).

Figure 6.2 Comparison by percentage between the population in UC/Ls and the total number of UC/Ls by population size, 2005



Source: BITRE time series estimates.

Table 6.3 presents the distribution of population by airport size. As shown, 90 per cent of the population who lived in UC/Ls were within the assumed access distance to large airports[11]. Population in UC/Ls within the assumed access distance to medium[12], small[13] and rural airports[14] accounted for 6.8 per cent of the total population in UC/Ls. As discussed in Chapter 4, the population in UC/Ls located beyond the assumed access distance to any airport was around 3 per cent.

11. 'At least one large airport' indicates that a UC/L is located within the assumed access distance to at least one large airport, with the possibility of also being within the assumed access distance to more than one large airport and/or other airports of smaller size than large airports.
12. 'At least one medium airport' indicates that a UC/L is located within the assumed access distance to at least one medium airport, with the possibility of also being within the assumed access distance to more than one medium airport and/or other airports of smaller size than medium airports.
13. 'At least one small airport' indicates a UC/L is located within the assumed access distance to at least one small airport, with the possibility of also being within the assumed access distance to more than one small airport and/or other airports of smaller size than small airports.
14. 'At least one rural airport' indicates at UC/L is located within the assumed access distance to at least one rural airport, with the possibility of also being within the assumed access distance to more than one rural airport.

Table 6.3 Distribution of population in UC/Ls, by airport size, 2005

	Access to:					
Distribution of population	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Persons	15 335 281	803 700	139 253	215 684	518 384	17 012 302
Percentage	90.14	4.72	0.82	1.27	3.05	100.00

Source: BITRE time series estimates.

Of the 894 000 people who lived in UC/Ls of less than 2000 people, approximately 500 000 people lived within the assumed access distance of at least one large airport, 131 000 people lived within the assumed access distance of at least one medium airport, 25 000 people lived within the assumed access distance of at least one small airport, 40 000 people lived within the assumed access distance of at least one rural airport and 170 000 people lived beyond the assumed access distance of any airport (Figure 6.4a).

Table 6.4c shows the percentage of each population size by airport size. The largest subgroup was obviously from the largest population size. All of those living in UC/Ls with a population size of more than 100 000 people were within the assumed access distance to at least one large airport. This group of population group constitutes 72.6 per cent of all population in UC/Ls. Of the 3 per cent of population in UC/Ls without close access to airports, 1 per cent was from a population size of less than 2000 people, around 1.5 per cent from a population size of 2000–19 999 people and 0.5 per cent was from the population size of 20 000–99 000 people.

Table 6.4c shows the percentage of each population size by airport size. Overall, more than half of the population in each population size lived within the assumed access distance to at least one large airport (Table 6.4c). This is not surprising as 90 per cent of the population who lived in UC/Ls were within the assumed access distance to at least one large airport. Table 6.4c also shows that the proportion of population in UC/Ls located beyond any access to an airport was the highest in centres of less than 2000 people. In 2005, the proportion of population without close access to airport was 19.1 per cent in a population size of less than 2000, 13.34 per cent in a population size between 2000 and 20 000 people, 4.58 per cent in the population size between 20 000 and 100 000 people and none in a population size of more than 100 000 people.

Table 6.4d shows that of all the population in UC/Ls beyond the assumed access distance, 32 per cent were from the population size of less than 2000 people. However, about 51.5 per cent of the population in UC/Ls without close access to airports was from a population size between 2000 and 20 000 people. The remaining 15.7 per cent was from a population size between 20 000 and 100 000 people.

Table 6.4 Distribution of population in UC/Ls: airport size by population size, 2005

(a) Distribution of population by airport size (persons)

	Distribution of population in UC/Ls (persons)					
Population size	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Less than 2000	526 221	131 047	25 739	40 572	170 423	894 002
2000–19 999	1 259 648	301 726	86 671	85 774	266 834	2 000 653
20 000–99 999	1 203 851	370 927	26 843	89 338	81 127	1 772 086
100 000+	12 345 561	0	0	0	0	12 345 561
Total	15 335 281	803 700	139 253	215 684	518 384	17 012 302

(b) Distribution of population by airport size (percentage of all population in UC/Ls)

	Distribution of population in UC/Ls (per cent)					
Population size	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Less than 2000	3.09	0.77	0.15	0.24	1.00	5.25
2000–19 999	7.40	1.77	0.51	0.50	1.57	11.75
20 000–99 999	7.08	2.18	0.16	0.53	0.48	10.43
100 000+	72.57	0.00	0.00	0.00	0.00	72.57
Total	90.14	4.72	0.82	1.27	3.05	100.00

(c) Distribution of population by airport size (percent calculated across the row)

	Distribution of population in UC/Ls (per cent)					
Population size	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Less than 2000	58.86	14.66	2.88	4.54	19.06	100.00
2000–19 999	62.96	15.08	4.33	4.29	13.34	100.00
20 000–99 999	67.93	20.93	1.51	5.04	4.58	100.00
100 000+	100.00	0.00	0.00	0.00	0.00	100.00

(d) Distribution of population by airport size (per cent calculated across the column)

	Distribution of population in UC/Ls (per cent)				
Population size	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*
Less than 2000	3.43	16.31	18.48	18.81	32.88
2000–19 999	8.21	37.54	62.24	39.77	51.47
20 000–99 999	7.85	46.15	19.28	41.42	15.65
100 000+	80.50	0	0	0	0
Total	100.00	100.00	100.00	100.00	100.00

Source: BITRE time series estimates.

The analysis above provides some useful insights to the pattern of where people live and their accessibility to airports of various sizes.

Table 6.5 shows the distribution of UC/Ls by airport size in 2005. It is observed that 58 per cent of UC/Ls were located within the assumed access distance to at least one large airport. Around 19 per cent of UC/Ls were located beyond the assumed access distance to any airport. The remaining 23 per cent of UC/Ls were scattered within the assumed access distance to medium, small and rural airports.

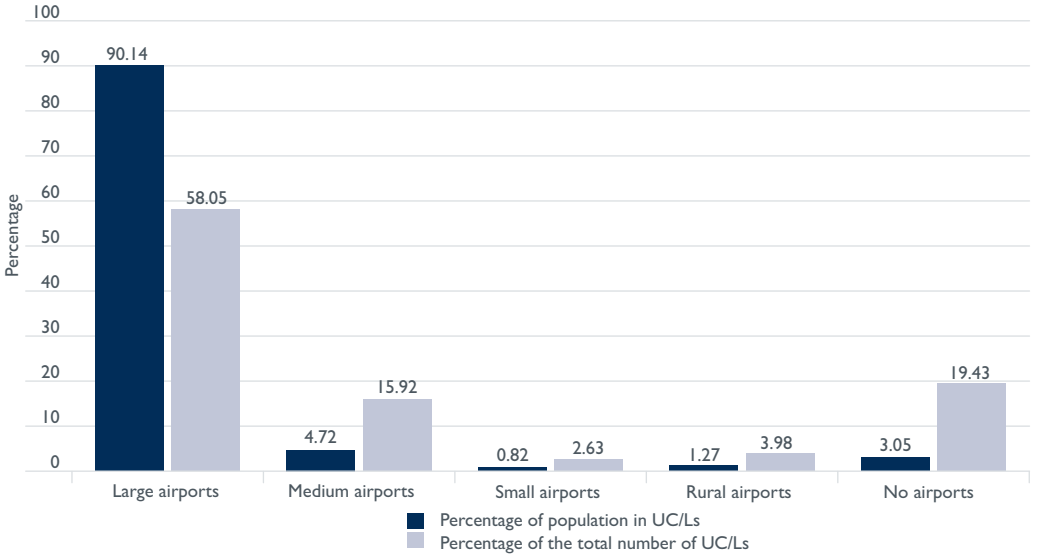
Table 6.5 Distribution of UC/Ls, by airport size, 2005

	Access to:					
Distribution of UC/Ls	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Number of UC/Ls	992	272	45	68	332	1709
Percentage	58.05	15.92	2.63	3.98	19.43	100.00

Source: BITRE time series estimates.

Figure 6.3 shows that approximately 90 per cent of all population in UC/Ls (distributed across 58 per cent of all UC/Ls) were within the assumed access distance to at least one large airport. Around 6.8 per cent of all population in UC/Ls distributed across 22.53 per cent of all UC/Ls were within the assumed access distance to a medium, small or rural airport. In the analysis of population distribution earlier, we found that half a million people or 3 per cent of the population in UC/Ls were located beyond the assumed access distance to any airport. Figure 6.3 shows that the number of UC/Ls involved amounted to about a fifth of the total number of UC/Ls.

Figure 6.3 Comparison by percentage between the population in UC/Ls and the total number of UC/Ls by airport size, 2005



Source: BITRE time series estimates.

Table 6.6 shows a further breakdown of the distribution of UC/Ls by population size. Again, the result illustrates the remote and sparse nature of geographical settlement in Australia.

As discussed in relation to Figure 6.2, a total of 1285 UC/Ls or 75 per cent of all UC/Ls in 2005 had a population of less than 2000 people. Of these, 1006 UC/Ls were within the assumed access distance to at least one airport (Table 6.6). Of these 1006 UC/Ls, 727 UC/Ls were within the assumed access distance to one large airport. Given the

sparseness of our population and the nature of our geography, the accessibility to airports in UC/Ls with less than 2000 people was reasonably good.

Among the UC/Ls beyond the assumed access distance to any airport, most (279 out of 332 UC/Ls) had less than 2000 people (Table 6.6). The 279 UC/Ls covered 1 per cent of the total population from all UC/Ls. It could also be observed that 51 UC/Ls with a population size between 2000 and 20 000 people were located beyond the assumed access distance to any airport. The 51 UC/Ls covered 1.6 per cent of the total population. There are two UC/Ls with a population size between 20 000 and 100 000 people located beyond the assumed access distance. As discussed in Chapter 4, they were Shepparton-Mooroopna in Victoria and Bunbury in Western Australia. All UC/Ls with a population of more than 100 000 were within the assumed access distance to airport.

Overall, the number of UC/Ls beyond the assumed access distance to any airport increases as the population size decreases.

Table 6.6 Distribution of UC/Ls: airport size by population size, 2005

	Distribution of UC/Ls				
Population size	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*
Less than 2000	727	200	29	50	279
2000–19 999	222	59	15	17	51
20 000–99 999	29	13	1	1	2
100,000+	14	0	0	0	0
Total	992	272	45	68	332

Source: BITRE time series estimates.

Income

Table 6.7 examines the distribution of population in UC/Ls by average weekly individual income group according to the airport classification. Broadly speaking, the distribution of population in UC/Ls for each airport size was mostly concentrated on the average weekly individual income group of $400 to $600. Relative to other airport sizes, the proportion of population in UC/Ls who received an average of $400 to $600 a week was the highest (92 per cent) for those who are within reach of at least one large airport. However, the correlation between the distribution of population in UC/Ls by average weekly individual income group and medium/small/rural/no airport is not completely clear. Around 37 per cent who lived in UC/Ls within the assumed accessed distance to at least one medium airport were in a lower income group of $200 to $400. The proportion is higher than those who lived in UC/Ls within the assumed access distance to small, rural and no airports.

Generally, the distribution of population in UC/Ls by income group for those who lived beyond the assumed access distance to any airport closely resembled those who lived in UC/Ls within the assumed distance to medium, small and rural airports.

Table 6.7 Distribution of population in UC/Ls: airport size by income group, 2005

Income group	*Distribution of population in UC/Ls (per cent)*				
Mean weekly individual income	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*
Less than 200	0.00	0	0.54	0.62	0.30
200–400	5.47	36.85	22.26	17.52	32.32
400–600	91.90	56.09	71.57	77.81	65.25
600–800	2.62	6.44	4.93	4.05	1.18
800+	0.01	0.61	0.70	0.00	0.96
Total	100.00	100.00	100.00	100.00	100.00

Source: BITRE time series estimates.

Table 6.8 shows the distribution of UC/Ls size by income group for each airport size. The average weekly individual income of most UC/Ls fell into the income groups of $200 to 400 and $400 to $600. There is again no obvious correlation between the distribution of UC/Ls by average weekly individual income group and airport sizes. More than half of the UC/Ls without close access to airports were from the income groups below $400 a week. Around 60 per cent of UC/Ls with access to medium airports were also from an income group below $400 a week.

Table 6.8 Distribution of UC/Ls: airport size by income group, 2005

Income group	*Distribution of UC/Ls*					
Mean weekly individual income	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*	*Total*
Less than 200	1	0	1	2	4	8
200–400	439	164	14	23	174	814
400–600	520	96	25	39	144	824
600–800	30	9	4	4	7	54
800–1000	2	3	1	0	3	9

Source: BITRE time series estimates.

Employment

Table 6.9 shows the subtle differences in the distribution of population in UC/Ls by labour force status for each airport size. The proportions of full-time workers who lived in UC/Ls within the assumed access distance to medium, small or rural airports or beyond the assumed access distance to any airport were generally slightly lower than those who lived within the assumed access distance to large airports.

Table 6.9 Distribution of labour force in UC/Ls: airport size by labour force status, 2005

	Distribution of labour force in UC/Ls (per cent)				
Labour force status	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*	*No airports*
Employed full-time	64.79	62.49	62.19	63.19	62.03
Employed part-time	32.30	34.42	34.60	33.67	34.72
Not stated	2.92	3.09	3.21	3.14	3.25
Total	100.00	100.00	100.00	100.00	100.00

Source: BITRE time series estimates.

6.3 Selected socio-demographic distributions based on projections of passenger movements at regional airports

In this section, passenger movements at 170 regional airports in 2005 were projected out to 2016 using the extrapolative methods described in Chapter 5. It was found that 37 regional airports exhibit marginal changes in the trend of passenger movements, 84 regional airports exhibit positive trends in passenger movements, 46 regional airports exhibited a negative trend in passenger movements and three regional airports do not have sufficient data for projections.

The projected results were used as an indicative direction of the future passenger trend of an airport. They were divided into two groups: regional airports with projected positive trends and those with projected negative trends in passenger movements. The corresponding UC/Ls and population for each group were extracted using spatial analysis as described in Chapter 4. Again, the assumed access distance of 40 km radius to small and rural airports and the assumed access distance of 120 km radius to large and medium airports were used in the analysis.

Demography

It is observed that 88.8 per cent of the population (Table 6.10) from 1144 UC/Ls (Table 6.11) lived within the assumed access distance to at least one airport with projected positive trend in passenger movements. The remaining 11 per cent of the population (Table 6.10) who lived within the assumed access distance to airport(s) with projected negative trends in passenger movements were scattered over 233 UC/Ls. Of these 233 UC/Ls, 178 UC/Ls were in a population size of less than 2000 (0.81 per cent of all population in UC/Ls). Overall, Table 6.11 shows that the number of UC/Ls located within the assumed distance to airports with negative projected passenger movements increases as the population size decreases.

Table 6.10 Distribution of population in UC/Ls based on projected passenger movements at regional airports

	Distribution of population (per cent)		
Population size	*Projected positive trend*	*Projected negative trend*	*Total*
Less than 2000	3.58	0.81	4.39
2000–19 999	8.57	1.94	10.51
20 000–99 999	8.94	1.31	10.25
100 000+	67.72	7.13	74.85
Total	88.80	11.20	100.00

Source: BITRE time series estimates.

Table 6.11 Distribution of UC/Ls based on projected passenger movements at regional airports

	Distribution of UC/Ls		
Population size	*Projected positive trend*	*Projected negative trend*	*Total*
Less than 2000	828	178	1006
2000–19 999	265	48	313
20 000–99 999	38	6	44
100 000+	13	1	14
Total	1 144	233	1 377

Source: BITRE time series estimates.

Income

Table 6.12 shows the distribution of population in UC/Ls by income group for those who lived within assumed access distance to airports with projected positive and negative growth passenger movements. As discussed in Section 6.2, the distribution of population in UC/Ls tends to concentrate within the income group of $400 to $600. It is observed that the proportion of population in this income group is lower for those who lived in UC/Ls within the assumed access distance to airports with negative projected passenger movements than those who lived in UC/Ls within the assumed access distance to airports with positive passenger movements. Almost 92 per cent of all population in UC/Ls who have access to airports with positive projected trends fell into the income group of $400 to $600, relative to 76.2 per cent of population in UC/Ls who have access to airports with negative projected trends. Close to 21.6 per cent of the population in UC/Ls who have access to airports with negative projected trends received a lower average weekly individual income of $200 to $400. The results are indicative. Nevertheless, it implies a possible correlation between the level of income and trends in passenger movements at regional airports.

Table 6.12 Distribution of population in UC/Ls by income group based on projected passenger movements at regional airports

Income group	*Distribution of population (per cent)*	
Mean weekly individual income	*Projected positive trend*	*Projected negative trend*
Less than 200	0.01	0.07
200–400	5.50	21.58
400–600	91.51	76.20
600–800	2.94	2.15
800+	0.05	0.00
Total	100.00	100.00

Source: BITRE time series estimates.

Table 6.13 shows the distribution of UC/Ls by income group based on projected passenger movements at regional airports. As the distribution of population by income group, the distribution of UC/Ls tends to concentrate within the income group of $400 to $600. The proportion of UC/Ls in this income group is 53 per cent for those UC/Ls located within the assumed access distance to airports with positively projected trends and 33 per cent for those UC/Ls located within the assumed access

distance to airports with negatively projected trends. Approximately, 64 per cent of UC/Ls located within the assumed access distance to airports with negatively projected trends were in the lower income group of $200 to $400.

Table 6.13 Distribution of UC/Ls by income group based on projected passenger movements at regional airports

Income group	*Distribution of UC/Ls*	
Mean weekly individual income ($)	*Projected positive trend*	*Projected negative trend*
Less than 200	2	2
200–400	491	149
400–600	603	77
600–800	48	5
800+	6	0
Total	1144	233

Source: BITRE time series estimates.

Employment

Table 6.14 shows the distribution of the labour force in UC/Ls for those who lived within the assumed access distance to airports with negatively and positively projected passenger movements. Overall, there are subtle differences in the distribution of labour force in UC/Ls by labour force status for the two groups. The proportion of full-time workers who lived in UC/Ls within the assumed access distance to airports with positively projected passenger movements was slightly higher than those who lived in UC/Ls within the assumed access distance to airports with negatively projected passenger movements.

Table 6.14 Distribution of labour force in UC/Ls based on passenger movements at regional airports

	Distribution of labour force (per cent)	
Labor force status	*Projected positive trend*	*Projected negative trend*
Employed full-time	64.95	62.22
Employed part-time	32.10	35.03
Not stated	2.95	2.75
Total	100.00	100.00

Source: BITRE time series estimates.

6.4 Air services at small and rural airports

Analyses in this chapter provide an insight into the population and UC/L distribution in the catchment areas of regional airports. An airports catchment area may reflect a potential market opportunity but does not necessarily reflect the existing provision of air services to these areas. This section examines the supply of air services at regional airports in terms of flight frequency, number of airlines and type of aircraft used by airport sizes in 2005.

Given that 90 per cent of the population from UC/Ls were within the assumed access distance to large airports, it is not surprising that almost all large airports (except

one) provided more than four return flights daily (Table 6.15). However, despite only 4.72 per cent of the population from UC/Ls living within access distance to medium airports, all medium-sized airports provided return air flights at least daily to four times daily a week. Similarly, most small airports provided an average of at least daily return flights or more a week, even though the total possible market size was less than 1 per cent of the population from UC/Ls.

Table 6.15 Distribution of regional airports: airport size by flight frequency, 2005

Flight frequency (Return flights per week)	*No. of airports*			
	Large airports	*Medium airports*	*Small airports*	*Rural airports*
Weekly or less	0	0	0	20
Two to four times per week	0	0	2	24
Five to six times per week	0	0	4	22
Daily to four times daily	1	12	30	15
More than four times daily	19	19	2	0
Total	20	31	38	81

Source: BITRE time series estimates.

As discussed in the earlier section, there were 68 UC/Ls that contained 1.27 per cent of population, living within the assumed access distance to at least one rural airport. These were scattered within the access distance to 81 rural airports. Table 6.15 shows that most rural airports offered fewer return flights a week than other airport sizes in 2005. A quarter of all rural airports provided an average one return flight per week or less, 30 per cent provided return flights of an average two to four times a week, and 27 per cent provided return flights of an average four to six times a week.

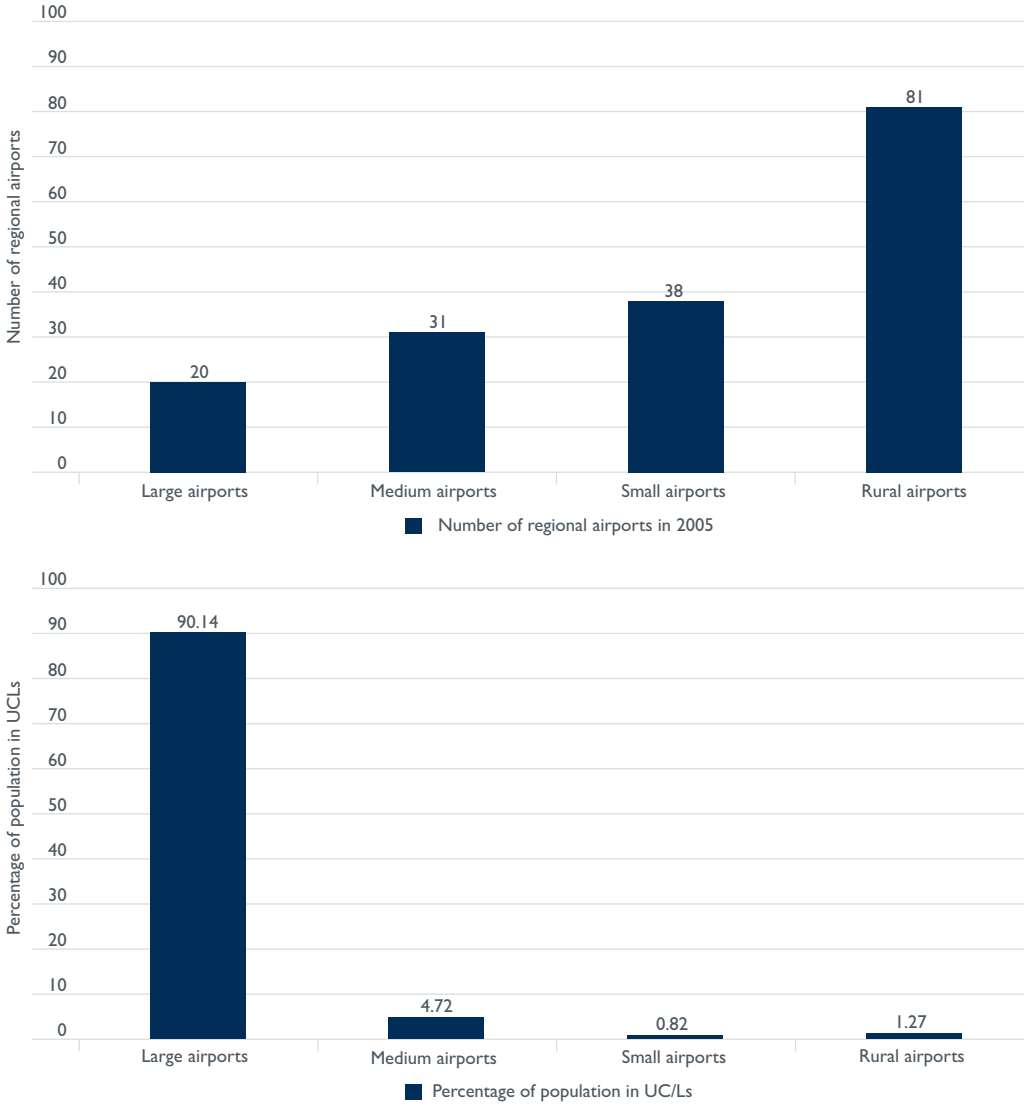
As discussed in Chapter 2, around 68 per cent of all regional airports were served by a single operator. It is not surprising to see that the number of airlines served at an airport decreases with airport size. Most rural airports were served by a single operator (Table 6.16). As discussed in section 6.1 (Figure 6.1), while there were 20 large regional airports providing services to the majority (78.3 per cent) of the total passenger movements at all regional airport in 2005, there were 81 rural regional airports serving only 1.16 per cent of the total passenger movements at all regional airports.

Figure 6.4 shows a clear contrast between the numbers of regional airports by airport size versus the population distributions by airport size. While the number of regional airports increases as the airport size decreases, the number of population increases greatly with the increase in airport size. The potential market for the 81 rural regional airports is about 1.3 per cent of the population from all UC/Ls (Figure 6.4). Due to the small market size, it is expected that most of the rural airports are unable to attract more than one airline. Table 6.16 shows that this is indeed the case.

Overall, the evidence indicates that smaller airports tend to be served by fewer airlines, provide less service and offer limited destination options. Driven by the need to maintain profitability, the decision of an airline on what market to serve and how to serve is largely dependent on air passenger demand.

As the number of seats has to be filled to cover costs, markets with a small passenger demand often struggle to reach the break-even load factor of an aircraft. Given the

Figure 6.4 Number of regional airports versus population in UC/Ls by airport size, 2005



Source: BITRE time series estimates.

demand, flight frequency is traded off to make the operation profitable. Even taking into account the use of smaller aircraft, there is a limit to cost reduction on thin to very thin routes that restricts the possibilities of offering more services and flying more destinations. There is also an additional constraint for the provision of air services on short-haul routes. Since costs per kilometre increase rapidly as distances decrease, the required break-even load factor is higher at short distances than long distances. Airlines will need to forgo the number of flight frequency or increase air fares to hold down their operating costs. Both methods tend to decrease patronage and may cause total revenue to fall rather than rise.

Table 6.16 Distribution of regional airports: airport size by number of serving airlines, 2005

	No. of airports			
No. of operators	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*
Single operator	1	12	30	74
Two operators	3	8	6	5
Three operators	3	8	2	2
Four operators	6	3	0	0
Five operators	3	0	0	0
Six operators or more	4	0	0	0
Total	20	31	38	81

Source: BITRE time series estimates.

Use of the appropriate aircraft size plays an important role in the economics of airlines. As discussed in Chapter 3, matching the right aircraft to the markets is a critical aspect of the overall operating cost. Table 6.17 shows the distribution of flights by aircraft payload for each airport size. Generally, below certain payloads or stage lengths, no aircraft can operate profitably. The use of low capacity aircraft increases as the airport size decreases (Table 6.17a).

In terms of aircraft seats, the flight frequency of aircraft with 100 seats or more is the highest at large airports (Table 6.17b). Both large and medium airports had a high percentage of flights using aircraft with 30 to 100 seats. Small airports appear to have a fairly even mixture of flights using aircraft with less than 18 seats, 18 to 29 seats and 30 to 100 seats. More than half of the flights at rural airports used aircraft with less than 18 seats; and a third of the flights used aircraft with an 18 to 29 seat capacity.

Two groups of aircraft take-off weight dominated the regional market. That is aircraft with a take-off weight of 15 tonnes or less and aircraft with a take-off weight of more than 21 tonnes (Table 6.17c). As expected, approximately 72 per cent of flights at large airports used aircraft with a take-off weight of more than 21 tonnes. On the other hand, more than 60 per cent of the flights at medium, small and rural airports used aircraft with a take-off weight of 15 tonnes or less.

Table 6.17d shows that close to 60 per cent of the all flights at large airports used jet aircraft. Most of the flights at medium, small and rural airports used turboprop aircrafts. Approximately 40 per cent of flights at rural airports used piston-driven aircrafts and another 40 per cent of flights used turboprop aircraft. Close to 20 per cent of flights at rural airports used jet aircraft.

Overall, the airline industry shows a general pattern of a good match between aircraft size and targeted market size. On a nationwide scale, the rationalisation of aircraft size and market size, to an extent, represents system efficiency in terms of the reallocation of resources.

Table 6.17 Distribution of flights: aircraft payload, seat, take-off weight and type, by airport size, 2005

(a) Aircraft payload

	No. of flights (percentage)			
Aircraft payload	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*
Low capacity	19.67	18.89	64.20	87.18
Others	80.33	81.11	35.80	12.82
Total	100.00	100.00	100.00	100.00

(b) Aircraft seats

	No. of flights (percentage)			
Aircraft seat	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*
Less than 18	10.09	6.49	31.41	52.53
18–29	9.33	13.76	32.79	35.12
30–100	43.75	78.84	35.80	6.74
100+	36.83	0.91	0.00	5.61
Total	100.00	100.00	100.00	100.00

(c) Aircraft take-off weight

	No. of flights (percentage)			
Aircraft take-off weight	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*
15 tonnes or less	27.25	60.98	89.68	77.55
15–21 tonnes	0.85	3.47	1.63	4.91
More than 21 tonnes	71.91	35.54	8.69	17.54
Total	100.00	100.00	100.00	100.00

(d) Aircraft type

	No. of flights (percentage)			
Aircraft type	*Large airports*	*Medium airports*	*Small airports*	*Rural airports*
Jet	59.67	7.82	13.51	19.49
Turboprop	36.88	86.95	67.43	40.60
Piston-driven	3.44	5.24	19.06	39.90
Total	100.00	100.00	100.00	100.00

Source: BITRE time series estimates.

6.5 Summary and implications

The key findings of this chapter are summarised as follows:

In 2005:

1. **Population in UC/Ls and access to airports**

   Access to large airports

   - Approximately 90 per cent of the population in 992 UC/Ls was within the assumed access distance to at least one large airport.
   - Of the 992 UC/Ls with access to large airports, 727 UC/Ls were in a population size of less than 2000 people.

   Access to medium, small and rural airports

   - 7 per cent of the population in 385 UC/Ls had access to medium, small or rural airports.
   - Of the 385 UC/Ls with access to medium, small or rural airports, 299 UC/Ls had a population size of less than 2000 people.

   In total, close to 80 per cent of the total number of UC/Ls with a population size of less than 2000 people (which covered 5.3 per cent of the total population in UC/Ls) were within the assumed access distance to airports with regular scheduled air services.

   In fact, close to 60 per cent of the total number of UC/Ls with a population size of less than 2000 people were within the assumed access distance to at least one large airport.

   Population beyond the assumed access distance to airports with regular scheduled air services

   - Of the 3 per cent of the population in the 332 UC/Ls located beyond the assumed access distance to any airport, 279 UC/Ls fall into the population size of less than 2000 people.

   There is a clear association between those UC/Ls located beyond the assumed access distance to any airport and the population size. The number of UC/Ls without close access to airports increases as the population size decreases.

2. **Average weekly income groups in UC/Ls and access to airports**

   - Overall, 92 per cent of the population in UC/Ls around large airports received an average weekly income between $400 and $600.
   - Most of the population from UC/Ls around medium, small, rural airports and those beyond the assumed access distance to any airport also earned an average weekly income between $400 and $600. However, between 18 per cent and 37 per cent of the population around medium, small, rural airports and those without close access to airports earned a lower average weekly income of $200 to $400.

- Half of the UC/Ls without close access access to any airports earned a lower average income of $200–400.

Broadly, the distribution of population in UC/Ls by income group for those who live beyond the assumed access distance to any airport is similar to those who lived in UC/Ls within the access distance to medium, small or rural airports.

3. **Projected growth in passenger movements and access to airports**

   - The number of UC/Ls within the assumed access distance to airports that were projected with negative passenger movements increases as the population size decreases.
   - Relatively, the proportion of population in UC/Ls with a lower income is higher around airports with negatively projected passenger movements than airports with positively projected passenger movements.
   - The proportion of full time workers in UC/Ls is slightly lower around airports with negatively projected passenger movements than airports with positively projected passenger movements.

4. **Air services at small and rural airports**

   Flight frequency in 2005

   - 95 per cent of all large airports, which covered 90 per cent of UC/Ls population provided an average of more than four return services per day.
   - All medium airports, which covered 4.72 per cent of UC/Ls population, provided an average of one daily return service or more.
   - 85 per cent of all small airports, which covered 0.8 per cent of UC/Ls population, also provided an average of one daily return service or more.
   - 80 per cent of the rural airports, which covered 1.3 per cent of UC/Ls population, provided an average of less than one return service a day.

   While there were 20 large regional airports accounting for 78.3 per cent of the total passenger movements at all regional airport in 2005, there were 81 rural regional airports accounting for only 1.16 per cent of the total passenger movements at all regional airports.

   The sparseness and remoteness of most UC/Ls near rural airports means that most of the rural airports lack the passenger demand to increase flight frequency.

   Number of operators

   - Around 68 per cent of all regional airports were served by a single operator.
   - More than 90 per cent of all rural airports were served by a single operator.

   Due to the small market size, it is expected that most of the rural airports lack the financial incentive to attract more than one airline.

   It seems that most rural airports with a single operator are not contestable.

Aircraft type

- The frequency of using low capacity aircraft increases as the airport size decreases.
- The proportion of flights using aircraft with one hundred seats or more at large airports was higher relative to airports of smaller sizes.
- Both large and medium airports had a high percentage of flights using aircraft with 30 to 100 seats.
- Small airports appear to have a fairly even mixture of flights using aircraft ranging from 18 seats to 100 seats.
- More than half of flights to and from rural airports used aircraft with less than 18 seats, followed by a third of the flights performed using aircraft with 18 to 29 seats.
- Close to 60 per cent of all flights to and from large airports used jet aircraft. Most of the flights to and from medium, small and rural airports used turboprop aircraft. Around 40 per cent of flights to and from rural airports used piston-driven aircraft and the other 40 per cent using turbo-prop aircraft.
- Approximately 20 per cent of flights to and from rural airports used jet aircraft.

Overall, the airline industry shows a general pattern of a good match between aircraft size and targeted market size. The industry has streamlined and consolidated their operations in a manner that makes economic sense. On a nationwide scale, the rationalisation of aircraft size and market size represents system efficiency in terms of the reallocation of resources.

This chapter draws on the central issue of regional aviation: the adequacy of air services in regional Australia. As noted earlier, accessibility of air services in regional Australia represents only one aspect of adequacy of air services in regional Australia. A more fundamental question to the adequacy of air services is whether the current services are sufficient to meet regional Australia's needs. There is no single simple answer.

The overall sparseness and remoteness of the settlement pattern in regional Australia poses the following challenges to the efficiency of air service provision to regional areas, in particular to smaller communities:

- greater infrastructure requirements per head of population
- fewer gains from economies of scale
- less competitive pressures on suppliers
- lack of access to the benefits from the agglomeration of other economies (Dolman, B. et al. 2007).

It is evident that the size of urban/community clusters is one of the critical factors affecting the level of air services provided. Smaller and isolated communities typically lack the population base to generate sufficient passenger demand for airlines to cover costs. The level of local economic activity may also play a role in determining how much air service a community receives. The level of income could

influence consumer willingness and the ability to pay for air services. As airlines are motivated to maximise profit, there is often less incentive to provide services to urban/community clusters with small passenger demand and short-stage length between stops. As discussed, operations of both natures require higher costs per kilometre.

Despite many small settlements in regional Australia being subjected to some geographical disadvantages, statistical evidence indicates that the vast majority of the population were within the assumed access distance to airports offering regular scheduled air services. However, the level of air services to many small and rural airports was fairly limited. Given the high number of rural airports and the sparse and dispersed settlement pattern of the population in most catchment areas, it is inevitable that at any given time, there will always be cases where the low density and short-haul market struggle to remain viable.

The future of air services to smaller settlements basically depends on the interplay of three key forces: the air transport market, aviation technology, and government policies.

Air services to medium or small communities are increasingly dependent on the ability of the commercial airlines to provide efficient replacement services in low density regional markets. Regional Express (Rex) exemplifies this situation. In 2006, Rex joined forces with Virgin Blue to provide regional passengers a convenient and cost effective way of flying around the country. Passengers flying on Rex from regional areas to Adelaide, Melbourne and Sydney are able to remain in the same terminal and connect smoothly to Virgin Blue destinations or vice versa without handling their luggage in between. In addition, Rex also joined forces with Burnie City Council and Burnie Airport Corporation in a special partnership arrangement which saw Rex introduce more flights and a much improved schedule between Burnie Airport and Melbourne. In the same year, Rex embarked on a large fleet modernisation and expansion program involving a long-term lease of 25 latest generation Saab 340B plus aircraft from Saab Aircraft Leasing over the three years. The improvement in service quality and the increase of cost efficiency by using appropriate aircraft make economically self-supporting air services possible.

Overall, the study shows that close to 20 per cent of the total number of UC/Ls with a population size of less than 2000 people were beyond the assumed access distance to an airport. These small clusters of population in regional Australia need to be reviewed and assessed from time to time in conjunction with the availability of and accessibility to other modes of transport. The sustainability and viability of air services to regional airports with catchment areas of less than 2000 people also need to be scrutinised.

Efforts to help the development and enhancement of air services to small communities often need to take into consideration whether adequate demand for new or enhanced service exists in the first place. Some communities may find it difficult to generate sufficient demand needed to support regular scheduled air services even with a substantial subsidy. In many cases, there are often other alternatives to regular scheduled air services that are more effective in enhancing community welfare (e.g. air charter, other mode of transports, etc.).

It is important to recognise that government action alone can never meet the aspirations of all small communities that see the need to obtain, retain or increase regular scheduled air services. Communities also play a crucial role in initiating and committing to sustain a supply of air services. A study conducted by the U.S. Government General Accounting Office (2003) on the Essential Air Service (EAS) program in the United States found that subsidies paid directly to airlines may not produce an effective transportation solution for passengers in many small communities. The study suggested that as airlines alter their operations in response to financial pressures, there may be an increasing demand for the federal government to assist small communities in attracting and maintaining air services. The study also proposed that small communities are more likely to obtain and maintain their air services by taking a variety of steps, such as marketing or offering financial incentives to attract or enhance air services. It has been suggested that, in selecting communities for assistance, federal efforts would be enhanced by recognising variations among those communities, helping to establish realistic goals, and identifying some indicators of local commitment.

The evidence-based approach used in this report helps to gain an understanding of the past and current state of the regional aviation industry in Australia. It also provides information for policy development related to regional aviation. The findings in this report set up a platform to assist policymakers in considering the appropriateness of government assistance, which may potentially be extended to some regional communities and not to others. It is critical that market interventions in regional aviation are made following rigorous assessment based on evidence in order to ensure that the benefits generated will exceed its costs.

6.6 Future research

This report lays a foundation for further research into regional aviation. As a result of the report, a comprehensive database for regional aviation has been developed. The database contains 22 years of time series data with various relevant cross-sectional variables and airport-related spatial data for each year. All data has been made consistent over time to allow for various time series analyses. While many key components of the regional aviation data were included in this study, there are other important aspects such as air fares and other cost-related information that have been excluded. Analyses presented in this report could be improved or complemented with additional data collection in these areas.

Policy formation for air services in regional Australia could also benefit from future research programs such as:

- studies on the effectiveness of government intervention in regional aviation
- studies on the affordability and financial sustainability of air transport in regional Australia
- use of multivariate statistical models to examine the relationship between demand for regional air services and key explanatory variables such as air fares and quality of services.

Appendix A

Historical trends in regional aviation

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Appendix A Historical trends in regional aviation

Table A1 Number of airlines serving regional airports, by state and territory, 1984 to 2005

No. of airlines served

Airports in New South Wales	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Williamtown	IR	8	7	6	6	6	5	5	5	6	3	2	3	2	4	4	5	4	5	6	8	8	7
Ballina	IR			1	2	2	2	2	2	2	2	1	1	2	2	4	4	4	4	4	2	3	4
Coffs Harbour	IR	3	3	3	3	4	6	7	5	7	5	3	3	4	6	7	5	5	6	6	5	5	3
Albury	IR	5	4	4	5	4	5	5	5	7	8	5	6	4	3	3	3	4	4	5	3	3	3
Dubbo	OR	3	2	2	2	2	2	4	3	4	5	3	3	4	3	3	3	3	4	5	3	3	3
Armidale	IR	2	2	2	2	2	3	4	2	3	3	3	3	3	3	3	3	3	4	4	3	3	3
Norfolk Island	VR	3	3	3	3	3	3	3	2	2	3	1	1	1	4	4	3	2	2	2	2	1	3
Port Macquarie	IR	3	3	3	3	3	3	2	2	2	2	2	2	3	5	5	3	2	4	4	2	3	2
Wagga Wagga	IR	4	4	4	4	5	5	4	4	5	6	5	3	3	2	2	2	2	5	5	3	2	2
Tamworth	IR	2	2	2	3	3	3	4	5	8	7	3	3	3	3	3	2	3	4	4	3	2	2
Lord Howe Island	VR	3	2	2	2	2	2	2	2	3	3	2	2	3	4	4	3	2	2	2	2	2	2
Grafton	OR	2	2	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	1
Taree	IR	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	3	3	4	2	1
Lismore	IR	1	1	1	1	1	2	3	3	3	2	2	2	2	2	1	1	1	2	2	2	2	1
Cooma	IR	2	2	2	2	2	3	3	3	3	3	3	3	3	1	1	1	1	2	2	2	2	1
Broken Hill	OR	6	6	9	6	5	5	4	4	4	4	4	4	3	3	4	3	3	3	4	1	1	1
Merimbula	OR	2	2	2	2	2	3	2	2	2	2	3	3	3	3	2	2	2	3	3	1	1	1
Griffith	OR	1	1	2	2	1	2	3	2	1	3	2	2	1	1	1	1	1	2	3	1	1	1
Moree	OR	1	1	1	1	1	2	1	1	2	2	1	2	2	1	1	2	2	2	2	1	1	1
Inverell	OR	1	1	1	1	2	1	1	1	1	2	1	1	2	1	2	1	1	2	2	1	1	1
Orange	IR	1	1	1	1	1	1	2	1	1	1	2	2	1	1	1	1	1	2	2	1	1	1
Parkes	OR	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
Moruya	IR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
Narrandera	OR	1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	2	1	1	1
Bathurst	IR	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	2	1	1	1
Coonamble	R	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1
Narrabri	OR	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
Mudgee	OR	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1
Cobar	VR	2	1	1	1	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1
Bourke	VR	2	1	1	1	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Walgett	R	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lightning Ridge	R					1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gunnedah	OR	1	1	1	1	1	1	2	3	2	2	2	2	2	1	1	1	1				1	1
Coonabarabran	OR	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1				1	1
West Wyalong	OR	1	1	2	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1				1
Kempsey	OR	1	1	1	1	2	1	1	1	2	3	2	1	1	1	1	1	1	2		2	1	
Glen Innes	OR	1	1	1	1	2	1	1	1	1	2	1	1	2	1	2	1	1	2	2	1		
Cudal	OR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Cootamundra	IR	1	1	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	1				
Cowra	OR	1	1	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	1				
Young	OR	1	1	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	1				
Forbes	OR	2	1	1	1	2	1	1	2	1	2	1	1	1	1	1	1	1	1				
Casino	IR	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1				
Brewarrina	VR	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1				
Nyngan	R	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1				
Deniliquin	IR	1	1	1	1	1	1	1	2	1	3	3	1	1	1	1	1	1					
West Maitland	IR	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1					
Scone	IR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
Singleton	IR	1	1	1	1	1	1				1	1	1	1	1	1	1	1					
Corowa	IR			1	2	2				1					1								
Condobolin	OR	1	1	1	1	1	1	1	2	1	1	1	1										
Hay	R	1							1	1	1	1	1										
Forster	IR		1				1	1	1	1		1	1										
Quirindi	OR	1	1	1	1	1	1	1	3	2	1	1											
Cessnock	IR	1	1	1	1	1	1	1	1	1	1	1											
Temora	OR	1	1	2	1	1	1		2		1	1											
Wee Waa	R										1	1											
Palm Beach	IR	1	1	1	1	1	1	1	1	1	1												

(continued)

Table A1 Number of airlines serving regional airports, by state and territory, 1984 to 2005 (continued)

		No. of airlines served																					
Airports in New South Wales	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Tumut	IR	2	2	2	2	2	2	1															
Goulburn	IR						1																
Nowra	IR				1	1																	
Port Stephens	IR	1	1																				
Evans Head	IR		1																				
Tocumwal	OR	1																					
Wilcannia	VR	1																					
Airports in Northern Territory																							
Darwin	OR	8	8	7	6	6	9	7	7	7	9	5	6	6	5	6	5	4	7	6	6	6	7
Alice Springs	R	7	7	7	6	7	9	8	7	5	7	3	3	3	3	3	3	3	5	3	4	4	5
Katherine-Tindal	R	3	2	4	3	3	2	2	4	2	4	3	3	3	2	1	1	3	4	3	5	3	3
Groote Eylandt	VR	4	4	3	3	4	3	1	6	3	3	4	4	3	2	2	2	3	3	2	4	3	3
Gove	VR	6	6	5	6	6	5	5	7	5	6	4	4	4	3	4	4	3	4	3	3	3	3
Tennant Creek	VR	2	2	2	2	3	2	1	2	2	3	2	1	1	1	1	1	1	1	1	1	1	3
Maningrida	VR	2	1			1			1	2	3	2	2	2	2	2	1	2	1	2	2	2	2
Elcho Island	VR	2	2	2	2	2	2	1	2	2	3	3	3	3	2	2	2	2	2	2	2	1	2
Numbulwar	VR	1	1	1	1	2	1		2	1	1	2	2	2	2	2	2	2	3	2	2	1	1
Ayers Rock	VR	5	6	6	6	6	5	5	7	5	7	4	4	4	4	3	3	3	2	2	2	1	1
Milingimbi	VR	3	3	1	1	1	1	1	1	3	3	2	3	4	3	3	2	2	2	2	2	1	1
Ramingining	VR	2	2	2	2	2	2	1	2	2	3	2	3	2	2	2	2	2	2	2	2	1	1
Lake Evella	VR	2	2	2	2	2	2	1	2	2	3	2	2	2	1	1	1	1	2	2	1	1	1
Hooker Creek	VR	1	1	1	1	2	1		1			1	1	1	1	1	1	1	2	1	1	1	1
Kalkgurung	VR	1	1	1	1	2	1		1			1	1	1	1	1	1	1	2	1	1	1	1
McArthur River	VR										1	1	2	1	1	1	1	1	1	1	1	1	1
Victoria River Dow	VR	1	1	1	1	2	1		1			1	1	1	1	1	1	1	1	1	1	1	1
Yuendumu	VR	1	1	2	1														1	1	1	1	1
Borroloola	VR	1	1	1	1	2	1		1		1	1	1	1	1	1	1	1	2	1	1		
Roper River	VR	1	1	1	1	2	1		1			1	1	1	1	1	1	1	2	1	1		
Bathurst Island	VR	1	1	1	1	1	1		1	1	2	1	1	1	1	1	1	1	1	1	1		
Garden Point	VR	1	1	1	1	1	1		1	1	2	1	1	1	1	1	1	1	1	1	1		
Snake Bay	VR	1	1	1	1	1	1		1	1	2	1	1	1	1	1	1	1	1	1	1		
South Goulburn Island	VR	3	1	1						2	2	1	1	1	1	2	1	1	1				
Croker Island	VR	1	1	1						1	1	1	1	1	1	2	1	1	1				
Kings Canyon	VR										1	1	1	1	1	1	1	1					
Jabiru	VR	1	1	2	1	1	1							1	1	4	2						
Oenpelli	VR	1	1	2	1	1	1			1	1	1	1	1	1								
Bickerton Island	VR													1									
Wollogorang	VR					1	1					1	1										
Austral Downs	VR											1	1										
Lake Nash	VR											1	1										
Manners Creek	VR											1	1										
Peppimenarti	VR				1	1	1																
Port Keats	VR				1	1	1																
Mount Denison	VR			2		1	1																
Willowra	VR		1			1	1																
Alcoota	VR					1	1																
Ammaroo	VR					1	1																
Andado	VR					1	1																
Annitowa	VR					1	1																
Argadargada	VR					1	1																
Baikaal Station	VR					1	1																
Calvert Hills	VR					1	1																
Delmore Downs	VR					1	1																
Dry Creek	VR					1	1																
Elkedra	VR					1	1																
Finke	VR					1	1																
Jervois	VR					1	1																
Jervois Mine	VR					1	1																
Kiana	VR					1	1																
Lilla Creek	VR					1	1																
Lucy Creek Station	VR					1	1																
Mallapunyah Spring	VR					1	1																
Mount Allen	VR					1	1																
Mount Riddock	VR					1	1																
Mount Swan	VR					1	1																

(continued)

(continued)

Airports in Northern Territory	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
		No. of airlines served																					
New Crown	VR					1	1																
Nudgiburra	VR					1	1																
Numery	VR					1	1																
Ooratippra	VR					1	1																
Rabbit Flat	VR					1	1																
Redbank Mine	VR					1	1																
Tieyon	VR					1	1																
Ucharonidge	VR					1	1																
Umbeara	VR					1	1																
Utopia	VR					1	1																
Walhallow	VR					1	1																
Wave Hill	VR	1	1	1	1	2																	
Cooinda	R	1		1	1	1																	
Docker River	VR	1	1	2	1																		
Kintore	VR	1	1	2	1																		
Papunya	VR	1	1	2	1																		
Cape Don	VR				1																		
Mudginbarry	VR				1																		
Murgenella	VR				1																		
Smith Point	VR				1																		
Haasts Bluff	VR	1	1	1																			
Areyonga	VR	1		1																			
Napperby	VR			1																			
Nathan River	VR	1																					
Airports in Queensland																							
Townsville	OR	5	3	3	4	8	10	10	6	7	7	4	5	5	5	6	5	5	6	7	6	6	8
Cairns	OR	4	5	5	6	9	14	11	10	11	11	5	6	8	6	7	7	7	8	6	7	7	6
Maroochydore	IR	4	4	5	6	6	4	4	4	3	6	4	4	5	3	4	4	4	6	4	4	4	5
Rockhampton	IR	5	7	6	6	8	9	10	8	8	9	4	4	4	4	4	4	5	5	5	5	4	4
Mackay	OR	4	4	4	5	8	8	8	8	7	9	4	4	4	4	5	5	6	7	4	4	4	4
Hamilton Island	R	2	2	2	2	1	5	3	3	3	4	1	1	1	1	2	3	5	5	2	2	4	4
Hervey Bay	IR	1	1	1	2	2	2	1	1	1	2	4	3	2	2	2	2	2	4	4	2	2	4
Proserpine	R	3	3	3	3	5	7	5	4	4	7	3	3	3	4	3	4	4	3	1	2	3	2
Longreach	VR	4	2	1	1				1	2	1	1	1	1	1	1	1	1	4	3	3	2	2
Mount Isa	R	4	4	4	5	5	5	7	6	6	6	4	6	5	5	6	5	5	5	3	2	2	2
Charleville	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	4	3	2	2	2
Thursday Island	VR	1	1	1	2	3	3	3	2	3	3	3	2	2	3	2	3	3	3	2	2	2	2
Birdsville	VR	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2
Bedourie	VR	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	2	1	2	2	2
Boulia	VR	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	2	1	2	2	2
Cloncurry	VR	1	1	1	1				1	1	1	1	1	1	1	2	2	2	2	1	2	2	1
Gladstone	IR	2	2	2	4	4	4	3	3	3	2	3	2	2	2	2	2	2	3	3	2	1	1
Maryborough	IR	2	2	2	2	2	2	1	1	1	2	2	1	1	1	1	1	1	2	3	1	1	1
Roma	OR	3	3	2	1				1	1	1	2	2	1	1	1	1	1	3	2	1	1	1
Barcaldine	VR	2	1	1	1				1	1	1	1	1	1	1	1	1	1	3	2	1	1	1
Blackall	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	3	2	1	1	1
Winton	VR	2	1	1	1				1	1	1	1	1	1	1	1	1	1	2	2	1	1	1
Thangool	OR	1	2	1	3	3	2	1	1	2	1	1	1	1	1	1	1	1	4	1	1	1	1
Bundaberg	IR	2	2	2	3	3	3	2	3	3	3	4	2	2	2	2	2	2	3	1	1	1	1
Emerald	OR	2	3	2	4	4	2	2	2	2	2	2	2	2	2	2	2	2	3	1	1	1	1
Weipa	VR	1	1	1	1	2	2	2	5	2	4	3	1	1	2	2	2	3	2	1	1	1	1
Cooktown	VR	1	1	1	2	2	1	2	1	1	1	1	2	3	1	1	1	2	2	1	1	1	1
Karumba	VR	1	1	1	1			1	1	1	1	2	2	2	1	1	1	2	2	1	1	1	1
Cunnamulla	VR	1	1								1	1	1	2	1	1	2	1	2	1	1	1	1
Saint George	R	1	1								1	1	1	2	1	1	2	1	2	1	1	1	1
Thargomindah	VR	1	1								1	1	1	2	1	1	2	1	2	1	1	1	1
Hughenden	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Julia Creek	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Quilpie	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Richmond	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Windorah	VR	1	1	1	1				1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Lizard Island	VR	1	1	1	1	2	1	2	1	1	2	1	1	1	1	2	2	2	1	1	1	1	1
Dunk Island	R	1	1	1	1	2	1	1	1	1	2	1	1	1	1	2	1	2	1	1	1	1	1
Burketown	VR	1	1	1	1			1	1	1	1	2	2	2	1	1	1	2	1	1	1	1	1
Normanton	VR	1	2	1	1			1	1	1	1	2	1	2	1	1	1	2	1	1	1	1	1
Kowanyama	VR	1	2	1	1			1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1
Doomadgee	VR	1	1	1	1			1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1
Edward River	VR	1	1	1	1			1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1

(continued)

Table A1 Number of airlines serving regional airports, by state and territory, 1984 to 2005 (continued)

		No. of airlines served																					
Airports in Queensland	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Mornington Island	VR	1	1	1	1			1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1
Iron Range	VR	1	1	1	2	2	1	2	2	1	2	1		3	2	1	1	1	1	1	1	1	1
Blackwater	OR	2	3	2	4	3	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Coen	VR	1	1	1	2	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1
Aurukun	VR	1	1	1	1			1	1	1	1			1	1	1	1	1	1	1	1	1	1
Yorke Island	VR				1	1	1	2	1	1	2	1				1	1	1	1	1	1	1	1
Oakey	IR						1													1	1	1	1
Palm Island	R	1	1	1	1															1	1	1	1
Durham Downs	VR	1	1	1	1	1	1	1													1	1	1
Durrie	VR	1	1	1	1	1	1	1													1	1	1
Glengyle	VR	1	1	1	1	1	1	1													1	1	1
Roseberth	VR	1	1	1	1	1	1	1													1	1	1
Ballera	VR																				1	1	1
Moranbah	R	2	2	2	1	2	2	1														1	1
Arrabury	VR	1	1	1	1	1	1	1														1	
Sandringham	VR																					1	
Brampton Island	R	1	1	1	1	2	1	1	1	1	2	1	1	1	1	2	1	2	1	1	1		
Toowoomba	IR	3	3	2	1	1	1		2	3	2	2	2	3	2	2	2	1	2	2			
Bamaga	VR	1	1	1	2	3	3	3	2	3	2	2	2	2	2	2	2	2	2				
Great Keppel Island	R	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1							
Hope Vale	R									1	1	1	1	1									
Augustus Downs	VR											1	1										
Iffley	VR											1	1										
Lawn Hill	VR											1	1										
Badu Island	VR				1	1	1	2	1	1	2	1											
Boigu Island	VR				1	1	1	2	1	1	2	1											
Coconut Island	VR				1	1	1	2	1	1	2	1											
Darnley Island	VR				1	1	1	2	1	1	2	1											
Kubin Village	VR				1	1	1	2	1	1	2	1											
Saibai Island	VR				1	1	1	2	1	1	2	1											
Yam Island	VR				1	1	1	2	1	1	2	1											
Mabuiag Island	VR				1	1	1	2	1	1	1												
Murray Island	VR				1	1	1	2	1	1	1												
Sue Island	VR				1	1	1	2	1	1	1												
Charters Towers	OR	1	1	1	1				1	1	1												
Goondiwindi	OR	1	1							1	1												
Turtle Head Island	VR									1													
Noosa	IR	1	1	1	1	1	1	1	1														
Shute Harbour	R	2	1					1	1														
Dauan Island	VR								1														
Dysart	R	2	2	2	1	2	2	1															
Clermont	R	1	1	2	2	3	1	1															
Middlemount	R	2	2	2	1	1	1	1															
Kamaran Downs	VR		1	1	1	1	1	1															
Heathlands	VR							1															
Caloundra	IR	1	1		1	1																	
Gympie	IR				1	1																	
Orchid Beach	R				1	1																	
Gayndah	OR	1	1			1																	
Kingaroy	IR	1	1			1																	
Collinsville	R	1	1	1																			
Alpha	VR	2	1																				
Croydon	VR	1	1																				
Dalby	IR	1	1																				
Delta Downs	VR	1	1																				
Dunbar	VR	1	1																				
Georgetown	VR	1	1																				
Inkerman	VR	1	1																				
Koolatah	VR	1	1																				
Monto	OR	1	1																				
Robin Hood	VR	1	1																				
Rutland Plains	VR	1	1																				
Vanrook	VR	1	1																				
Dorunda	VR		1																				
Miranda Downs	VR		1																				
Aramac	VR	1																					
Daydream Island	VR	1																					

(continued)

(continued)

Airports in Queensland	*RA Class*	*No. of airlines served*																					
		1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Happy Bay	VR	1																					
Hayman Island	VR	1																					
Isisford	VR	1																					
Miners Lake	R	1																					
Mitchell	VR	1																					
Muttaburra	VR	1																					
South Molle Island	VR	1																					
Airports in South Australia																							
Port Lincoln	R	3	5	6	4	5	4	2	2	2	2	2	2	3	3	4	3	2	2	3	3	3	4
Kingscote	R	5	6	7	4	3	4	3	4	4	4	5	4	4	4	3	3	2	2	3	3	3	4
Whyalla	OR	5	5	5	2	3	3	2	2	2	2	2	2	2	2	2	2	3	2	3	3	2	2
Mount Gambier	OR	6	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2
Ceduna	VR	2	2	2	1	1	1	1	1	1	1	1	1	2	2	3	2	1	1	2	2	1	1
Olympic Dam	R	1	2	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
Coober Pedy	VR	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
Port Augusta	OR	3	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
Leigh Creek	VR	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1
Clifton Hills	VR	1	1	1	1	1	1	1													1	1	1
Cordillo Downs	VR	1	1	1	1	1	1	1													1	1	1
Etadunna	VR	1	1	1	1	1	1	1													1	1	1
Innamincka	VR	1	1	1	1	1	1	1													1	1	1
Moolawatana	VR	1	1	1	1	1	1	1													1	1	1
Mulka	VR	1	1	1	1	1	1	1													1	1	1
Mungaranie	VR	1	1	1	1	1	1	1													1	1	1
Dulkaninna	VR		1	1	1	1	1	1													1	1	1
Cowarie	VR	1	1	1																	1	1	1
Nappa Merrie	VR																				1	1	1
Merty Merty	VR	1	1	1	1	1	1	1													1	1	
Pandie Pandie	VR	1	1	1	1	1	1	1													1	1	
Moomba	VR																				1	1	
Wudinna	VR		1	1	1	1	1	2		1	1	1	1	2	2	3	2	2	1	1	1		
Cleve	R		1	1	1	1	1	2		1	1	1	1	1	1	1	1	2	1	1			
Renmark	OR	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1			1				
Woomera	VR	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1					
Streaky Bay	VR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1						
Tumby Bay	R	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Penneshaw	R	1	1	2	1	1	1	1	1	1	1	1	1	1									
Cummins	R	1	1	1	1	1	1	1	1	1	1	1	1	1									
American River	R	1	1	1	1	1	1	1	1	1	1	1											
Parndana	R	1	1	1	1	1	1	1	1	1	1	1											
Minlaton	OR										1												
Alton Downs	VR	1	1	1	1	1	1	1															
Port Pirie	OR	1						1															
Lambina	VR					1	1																
Todmordon	VR					1	1																
Kimba	R						1																
Amata	VR	1	1																				
Ernabella	VR	1	1																				
Fregon	VR	1	1																				
Marla	VR	1	1																				
Marree	VR	1	1																				
Millicent	OR	1	1																				
Naracoorte	OR	1	1																				
Airports in Tasmania																							
Launceston	IR	3	4	4	3	4	7	9	8	9	9	7	5	5	6	4	7	7	6	5	4	5	4
Hobart	IR	4	5	5	5	5	9	6	4	4	5	3	3	3	5	5	6	7	6	4	3	4	4
Burnie	OR	4	4	4	5	5	6	7	4	4	4	4	6	5	6	6	6	4	3	5	3	3	3
Devonport	OR	4	4	4	4	5	5	7	6	7	5	4	5	4	4	4	4	3	3	5	3	3	3
King Island	VR	2	2	3	4	4	4	5	4	4	4	4	5	6	6	5	5	3	3	4	3	3	3
Flinders Island	VR	1	1	1	2	2	2	4	3	3	3	4	2	3	3	2	3	3	1	1	2	1	1
Cape Barren Island	VR											1	1	1	1							1	1

(continued)

Table A1 Number of airlines serving regional airports, by state and territory, 1984 to 2005 (continued)

		No. of airlines served																					
Airports in Tasmania (continued)	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Strahan	R	1	1	1	1	1	1	1	1	1	1	1	1	1								1	1
Cambridge	IR									1	1	1										1	1
Queenstown	R	1	1	1	1	1	1	1	1	1	1	1	1	1									
Smithton	OR	1	1	2	2	2	2	2	2	2	2	1											
George Town	OR										1	1											
Saint Helens	OR									1	1												
Airports in Victoria																							
Mildura	OR	2	2	5	4	4	4	3	2	3	3	2	2	2	2	4	4	4	3	5	3	3	3
Portland	OR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	2	2
Mount Hotham	OR																	2	3	2	1	1	1
Hamilton	OR	1	1	1	1	1	1	1	1													1	1
Warrnambool	IR	1	1	1		1	1	1														1	1
Latrobe Valley	IR						1				1	2	2	3	4	3	3	3	2	2	2		1
Shepparton	IR			1	1							1			1	1	1	1					
Swan Hill	OR				1	1	1	1		1	2	2	1				1	1					
Wangaratta	IR					1												1					
Sale	IR		1	1	1	1	1	1			1	2	2	3	2	1	1						
Geelong	IR												1	1	1	1	1						
Phillip Island	IR	1	1	1	1	1	1	2	1	1	1	1	1										
Echuca	IR					1	1	1				1	1										
Welshpool	OR							1	1	1	1	1											
Ouyen	OR						1	1															
Horsham	OR					1	1																
Warracknabeal	OR					1																	
Airports in Western Australia																							
Broome	R	1	1	2	1	1	1	1	2	2	2	2	5	4	4	2	5	5	6	4	6	7	5
Port Hedland	R	4	4	4	4	3	3	2	3	1	4	3	4	4	4	3	2	3	4	2	2	4	3
Newman	VR	3	2	1	1	1	1	1	1	2	2	1	2	2	2	2	1	1	3	2	3	3	3
Kununurra	VR	3	2	2	2	2	2	2	2	3	3	2	4	4	3	2	3	2	3	2	1	2	3
Karratha	VR	2	3	3	3	3	2	2	2	1	2	2	3	3	3	2	2	3	4	3	3	4	2
Halls Creek	VR	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	3	2
Kalgoorlie	OR	4	4	4	6	3	5	6	5	6	6	5	4	3	3	3	3	3	3	2	2	2	2
Geraldton	OR	3	3	3	4	2	3	3	3	3	4	3	4	4	4	3	2	3	3	2	2	2	2
Leinster	VR	1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2
Derby-Curtin	VR	3	2	2	2	2	2	2	2	2	3	2	4	3	3	2	3	2	1	3	1	2	1
Learmonth	VR	1	1	1	1	1	2	1	1	2	2	2	2	2	2	2	2	3	3	2	1	2	1
Fitzroy Crossing	VR	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	2	1
Meekatharra	VR	2	2	2	3	3	2	2	2	2	3	2	2	2	1	2	1	2	1	1	2	1	1
Leonora	VR	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	1	1
Christmas Island	VR										1	1	1	1	2	1	1	1	2	1	1	1	1
Carnarvon	R	2	2	2	3	1	1	1	1	1	2	2	2	1	2	2	1	1	1	1	1	1	1
Mount Magnet	VR	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1
Cocos Island	VR										1	1	1	1	2	1	1	1	1	1	1	1	1
Paraburdoo	VR	3	2	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1
Esperance	R	1	1	1	1	2	2	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1
Laverton	VR	2	2	2	2	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1
Albany	OR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wiluna	VR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kalbarri	R	1	1	1	2		1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1
Monkey Mia	VR											1	1	1	1	1	1	1		1		1	1
Ravensthorpe	VR																					1	1
Shark Bay	VR	1	1	1	2		1	1	1	1	2	2	2	2	2	2	2	2	2	1	1		
Argyle	VR				1				1		1			1	1	1	1	1	1	1	1		
Busselton	IR														1	2	1	2	1		1		
Plutonic Mine	VR																			1			
Margaret River	OR																1	2	1				
Useless Loop	VR	1	1	1	2		1	1	1	1	1	1	1	1	1	1	1	1	1				
Mount Keith	VR										1	1	1	1	1	1	1	1	1				

(continued)

(continued) *No. of airlines served*

Airports in Western Australia	*RA Class*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Margaret River Station	VR	2	1	1	1	1	1	1	1	1	1	1	1	1	1		2						
Kalumburu	VR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Wyndham	VR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Balgo Hills Missio	VR	1	1	1					1		1	1	1	1	1	1	1						
Drysdale	VR								1		1	1	1	1	1	1	1						
Cue	VR					1	1	1	1	1	1	1	1	1	2	2							
Rottnest Island	R	1	2	3	2	1	1	1	1	1	1	1	1	1	1	2							
Marble Bar	VR	1	1	1	1	1	1	1	1		1	1	2	1	1	1							
Telfer	VR	1	1	1	1	1	1	2	2	1	1	1	2	1	1								
Woodie Woodie	VR										1	1	2	1	1								
Camp Nifty	VR													1	1								
Bunbury	IR	1	1	3	1								1										
Billiluna	VR								1	1	1												
Theeda	VR								1	1	1												
Ord River	VR									1	1												
Flora Valley	VR								1	1													
King Edward River	VR								1	1													
Ellenbrae	VR	1	1	1	1	1	1	1	1														
Mitchell Plateau	VR	1	1	1	1	1	1	1	1														
Nullagine	VR	1	1	1	1	1	1	1	1														
Onslow	VR	1	1	1	1	1	1	1	1														
Norseman	VR	2	1	1	2	1	1	1															
Porphyry	R	1	1	1	1	1	1																
Southern Cross	R	1	1	1	2		1																
Giles	VR	1	1	2	1																		
Kiwirrkurra	VR		1	2	1																		
Wittenoom	VR	1	1																				
Everard Park	VR	1																					
Kambalda	R	1																					
Morawa	R	1																					
Mullewa	R	1																					
Yeelirrie	VR	1																					

Source: BITRE time series estimates.

Table A2 Number of regional airports served, by airline, 1984 to 2005

Australia level *No. of airports served*

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Regional Express																			29	28	27	29
MacAir															3	3	17	36	33	37	33	28
Qantas Airways						4			1	12	17	19	20	19	18	20	22	23	26	24	25	24
Airlines of South Australia															4	4	6	5	4	24	26	21
Sunstate Airlines	9	9	9	15	16	17	14	13	15	22	21	19	20	19	25	18	24	28	28	23	21	20
Eastern Australia Airlines	22	21	20	18	22	17	20	19	18	16	15	12	12	11	11	11	14	15	20	20	18	19
Virgin Blue																		6	10	13	14	16
Skywest Airlines Pty Ltd	19	19	18	16	16	17	17	17	11	13	16	20	22	21	15	14	14	17	16	24	15	14
Jetstar																					10	13
Air North Regional										16	23	23	20	19	23	23	21	25	18	21	12	10
Australian Air Express																					11	9
Skytrans Airlines													4	7	8	8	8	8	8	8	8	9
Mission Aviation Fellowship	6	5	5	5	6	5	5	8	7	7	7	7	8	7	8	7	8	7	8	8	8	8
Sunshine Express															1	1	1	4	4	7	8	8
Aboriginal Air Services																		5	6	6	6	8
Air Link Pty Ltd								8	8	8	9	9	8	8	8	9	9	9	7	7	7	7
Skippers Aviation																2	4	4	4	4	8	6
Golden Eagle Aviation												4	5	6	3						6	5
Big Sky Express																					6	5
National Jet Systems Pty Ltd												7	7	9	6	4	4	4	4	4	5	5
Airlines of Tasmania																				2	5	5
Great Western Airlines																				6	4	4
Tasair															4	4	4	4	4	4	4	4
Sharp Aviation																		2	2	2	4	4
Vincent Aviation																						4
O'Connors Air Services	3	3	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	4	3	3	3	3
Brindabella Airlines																				3	2	3
Alliance Airlines																			5	6	4	2
Inland Pacific Air																			2	2	2	2
Emu Air Charter Pty Ltd								1	1	2	2	2	3	1	1	1	1	1	1	3	1	1
Maroomba Airlines															4	3	3	1	1	1	1	1
King Island Airlines							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Norfolk Jet Express Pty Ltd														1	1	1	1	1	1	1	1	1
Aeropelican Air Services						4													1		1	1
Northwest Regional																	6	7	6	5	5	
Anindilyakwa Air																		5	5	6	2	
Redpath Regional																				2	2	
Horizon Airlines															2	4	6		3	5		
Eastland Air								1	1	1	1	1	1	4	6	7	5	5	5	4		
Island Airlines Tasmania																	3	3	3	3		
Impulse Qantaslink																		27	26			
Hazelton Airlines Pty Ltd	8	8	10	10	23	26	29	31	17	21	20	20	18	17	17	17	17	20	18			
Kendell Airlines	10	12	17	23	17	21	21	21	24	20	21	20	22	21	18	20	21	24	17			
Southern Australia Airlines Pty Ltd			3	3	3	3	3	3	5	5	5	6	6	7	7	5	6	6	4			
Flight West Airlines								49	51	52	38	37	42	34	32	33	30	31	2			
Ansett Airlines of Australia	21	16	19	20	21	20	14	20	27	38	41	39	35	32	29	27	30	28	2			
Impulse Airlines	4	5	3	4	4	6	7	12	12	13	10	11	11	8	9	9	10	11				
Country Connection Airlines								3	3	6	7	6	5	5	5	5	5	5				
Western Airlines (WA)						5	4	4	4	4	4	4	4	4	4	4	4	4				
Air Facilities									1	1	2	2	2	2	2	1	1	1				
Transtate Airlines													10	10	13	15	15					
Singleton-Yanda Airlines	3	3	3	3	3	4	3	6	6	8	8	5	5	5	5	5	5					
Broome Airlines																5	4					
Island Airlines													3	4	3	4	4					
Paravion														2	2	4	4					
Whyalla Airlines							3	1	4	4	4	4	3	3	3	3	3					
Ord Air Charter Pty Ltd	10	10	11	9	9	9	9	15	12	12	9	9	9	9	8	10						
Australian Air Charterers Pty Ltd			2	2	4	5	6	6	6	6	7	7	6	7	6	6						
Southern Sky														2	6	6						
Tasman Australia Airlines															5	5						
Geelong Flight Centre												3	3	3	3	3						

(continued)

Australia level (continued)

Airlines	*No. of airports served*																					
	1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Kakadu Air															2	2						
Shepparton Airlines														1	1	1						
Ibis Air																1						
Arnhem Air Charter Pty Ltd	4	3							6	6	6	6	7	7	6							
Eyre Charter Pty Ltd	2	3	3	3	3	3	2	2	2	3	2	2	6	4	4							
Tamair									2	1	3	3	5	4	4							
Kentialink Australia														4	4							
Rottnest Airbus				1	1	2	2	2	1	1	1	1	1	3	3							
Airlines of Tasmania Pty Ltd	9	9	9	9	9	9	9	9	11	11	13	11	11	9								
Augusta Airways Pty Ltd	24	25	24	23	22	22	22	2	2	2	2	2	2	3								
Pacific Interline													2	2								
Albatross Airlines	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
Lincoln Airlines Pty Ltd				1	1	1	1	1	1	1	1	1	1	1								
Executive Air											4	6	5									
Sabair Airlines								1	1	4	5	5	5									
Air Swift									2	2	4	3	2									
Cape York Air												2	2									
Corporate Airlines										1	1	1	1									
SA Regional											1	1	1									
Air Mount Isa											8	8										
Qwestair							1	1	1	4	4	5										
Peninsula Air Services										3	8	4										
Phillip Island Air Charter	2	2	2	2	2	2	2	2	3	3	2	2										
Horizon Airways										1	2	2										
King Leopold Air												2										
Majestic Airways											2	1										
South-west Air												1										
Air Cairns										9	9											
Goldfields Air Services	4	4	4	4	6	7	6	5	4	4	4											
Air Maroochy Airlines										1	4											
Promair Australia							3	3	3	4	3											
Airtransit-air Kangaroo Island	3	3	4	4	4	4	4	4	4	3	3											
Link Airways								1	1	4	2											
Gawne Airlines											1											
Airlines of Western Australia	15	16	16	17	18	16	20	22	20	22												
Australian Airlines	30	26	26	28	15	14	11	15	15	14												
Air New South Wales	20	21	22	24	27	17	16	20	14	13												
East West Airlines	20	20	22	25	29	20	19	15	11	11												
Air North International Pty Ltd	12	8	11	17	22	20		16	11	10												
Monarch Air									9	9												
Australian Airlink								7	11	8												
Australian Regional Airlines (Qld)					8	12	13	13	10	8												
Southern Pacific Regional Airlines								3	6	4												
Western Nsw Airlines Pty Ltd	3	3	4	4	3	3	3	4	4	4												
Skyport Airlines								4	4	4												
Compass Airlines								1	2	2												
Air Midwest									2	2												
Aquatic Air	2	2	1	1	2	1	1	1	1	1												
Coast to Coast Airlines									2													
Ipec Aviation	1	1	1	1	1	1	1	1	1													
Airlines of Northern Australia	8	8	8	8	9	8	11	11														
Macknight Airlines	4	2	2	2	2	3	4	2														
Southern Airlines								2														
Sunbird Airlines Pty Ltd		14					31															
Falcon Airlines				17	17	17	17															
Queensland Pacific Airlines					2	17	11															
Flinders Island Airlines				7	12	12	11															
Norfolk Island Airlines Pty Ltd	3	11	9	3	3	5	11															
Australian Leased						11	10															
Countryair Pty Ltd							8															
Ansett Leased						10	7															
Air Central Air					2	3	2															
Chartair	13	14	12		39	39																
Royal Australian Air Force						10																
Piccolo Airlines			8	8	6	4																
Lloyd Aviation Jet Charter Pty Ltd		4	6	9	9	3																

(continued)

Table A2 Number of regional airports served, by airline, 1984 to 2005 (continued)

Australia level — *No. of airports served*

Airlines	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
State Air Pty Ltd	7	7	6		2	2																
Foreign Airlines						2																
Crane Airlines	1	1	1	2	2	1																
Air Queensland Ltd	52	34	35	33	14																	
Sungold Airlines				6	14																	
Tillair	14	13	21	19	13																	
Challenge Air Services					3																	
North Australian Air Charter					2																	
Avior Pty Ltd	11	8	9	8																		
Laurie Potter Airlines				8																		
Suncity Airlines			3	3																		
Wudinna Air Services		2	2	2																		
Easter Airways	1	1	1	1																		
Barrack Helicopters			1	1																		
Midstate Airlines			1	1																		
Airlines of South Australia	6	7	5																			
Arrmunda Airways Pty Ltd	5	5	5																			
Rossair Pty Ltd	7	7	4																			
Opal Air Pty Ltd	8	6	4																			
Murray Valley Airlines	4	3	3																			
Regional Airlines			2																			
Pacific Aviation Pty Ltd		1	1																			
Rottnest Airlines		1	1																			
Coddair Airlines Pty Ltd	17	17																				
South Burnett Aviation	3	5																				
Air Whitsunday	3	2																				
Fortescue Air Charter	2	2																				
Skymaster Aviation	2	2																				
Henebery Aviation Company	1	1																				
Avdev Airlines Of Australia	11																					
Jan Beers Aviation	5																					
Paggi S Aviation	2																					
Queensland Outback Tourist Services	2																					
Rundle Air Service Pty Ltd	2																					

Source: BITRE time series estimates.

Table A3 Aircraft movements at regional airports, by aircraft type, 1984 to 2005

50 000 flights or more
10 000 to 49 999 flights
5000 to 9999 flights
1000 to 4999 flights
Up to 999 flights

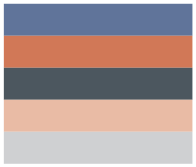
Engine Class: Jet

Aircraft movements at regional airports

Aircraft	*Engine count*	*Standard seat count*	*Standard take-off weight*	*Standard payload weight*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Boeing 737-800	2	180	78 390	19 500																						
Boeing 717-200	2	115	53 254	12 466																						
Boeing 737-700	2	144	60 330	16549																						
Airbus A320-200	2	177	73 500	16 108																						
Boeing 737-400	2	140	68 038	16 557																						
BAE 146-200	4	78	40 030	7 296																						
BAE 146-100	4	75	37 808	6 144																						
BAE 146-300	4	92	44 225	8 352																						
Fokker 100	2	91	44 450	12 236																						
Boeing 727-200	3	149	94 122	18 990																						
Boeing 767-300	2	244	172 365	32 269																						
Boeing 737-300	2	105	56 473	13 950																						
Airbus A330-200	2	303	230 000	41 838																						
BAE RJ-70	4	70	38 102	7 938																						
IAI 1124 Westwind	2	10	10 660	1 474																						
Airbus A330-300	2	335	212 000	46 715																						
Boeing 747-300	4	386	377 842	56 000																						
Boeing 767-200	2	202	156 489	26 886																						
Boeing 747-400	4	406	396 893	51 156																						
Boeing 747-200	4	410	351 540	56 000																						
Boeing 747-SP	4	320	318 000	44 000																						
Canadair CRJ-200	2	50	23 133	6 124																						
Fokker F28-4000	2	74	25 719	8 408																						
Fokker F28-1000	2	62	25 719	6 314																						
Airbus A300-200	2	242	157 500	30 129																						
Cessna Citation II	2	11	5 300	1 100																						
Fokker F28-3000	2	64	2 5719	6 077																						
McDonnell Douglas MD82	2	140	67 813	18800																						
McDonnell Douglas DC9-30	2	95	44 453	9 707																						
Airbus A300-600	2	277	170 500	36 000																						
Boeing 727-100	3	109	76 885	10 832																						
Airbus A310-300	2	212	150 000	22 000																						
Boeing 757-200	2	150	89 800	26 000																						
Boeing 707-300	4	155	152 410	41 500																						
Boeing 737-200	2	87	52 540	11 500																						

(continued)

Table A3 Aircraft movements at regional airports, by aircraft type, 1984 to 2005 (continued)



Engine Class: Turboprop

Aircraft movements at regional airports

Aircraft	*Engine count*	*Standard seat count*	*Standard take-off weight*	*Standard payload weight*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Saab 340	2	34	12 287	4 477																						
DHC-8-300	2	50	1 8643	5 216																						
DHC-8-100	2	36	15 649	4 037																						
Fairchild Metro III	2	18	5 670	2 330																						
Fairchild Metro 23	2	19	7500	2 330																						
Embraer EMB120	2	30	11 500	4 470																						
DHC-8-200	2	36	15 649	4 037																						
Fokker 50-100	2	50	20 820	5 142																						
BAE Jetsream 32	2	18	6 600	1 800																						
DHC-6-200	2	20	5 670	2 218																						
Cessna 208	1	13	3 310	1 450																						
Shorts 360	2	34	11 657	4 187																						
Beechcraft 1900	2	19	7 530	2 200																						
Embraer EMB110	2	18	5 670	1 800																						
DHC-6-320	2	20	5 670	2 218																						
Cessna 441	2	9	2 800	1 285																						
Beechcraft King Air 200	2	9	5 600	1 100																						
BAE Jetsream 31	2	17	6 600	1 724																						
Swearingen Metro II	2	18	5 675	2 330																						
Reims Cessna F406	2	10	2 800	1 285																						
Fairchild Merlin	2	7	5 670	1 970																						
Fokker F27-100	2	44	19 732	4 150																						
GAF N22 Nomad	2	12	3 855	1 730																						
Beechcraft King Air 90	2	9	4 800	1 000																						
Swearingen Merlin	2	7	5 670	1 970																						
DHC-7-100	4	50	19 958	5 127																						
Shorts 330	2	30	9980	3 400																						
Piper PA31T	2	9	2 800	900																						
Fokker F27-600	2	44	19 732	4 150																						
Grumman G-159	2	24	16 329	3 447																						
BAE Jetsream 41	2	29	10 886	4 470																						
Beech 99	2	15	5 125	1 500																						
Piper PA42	2	9	4 082	900																						
Nord 262	2	26	10 600	3 075																						
Aero Commander 600	2	9	3 400	1 000																						

(continued)

Engine Class:Turboprop (continued)

Aircraft movements at regional airports

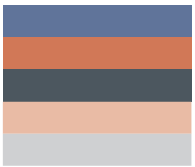
Aircraft	*Engine count*	*Standard seat count*	*Standard take-off weight*	*Standard payload weight*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Fokker F27-500	2	52	20 430	5 000																						
DHC-6-100	2	20	5 670	2218																						
Lockheed C130H	4	79	70 310	20 412																						
Fokker F27-400	2	44	19 732	4 150																						
Fokker F27-200	2	44	19 732	4 150																						
Hawker Siddeley HS-748	2	25	19 750	5 634																						
CASA C212	2	26	7 300	2 250																						
GAF N24 Nomad	2	15	3855	1 730																						
Mitsubishi MU-2-30	2	10	5 250	1 600																						
ATR 42-200	2	42	15 751	4 200																						
Sikorsky S61N	2	25	8 618	2 263																						
Mitsubishi MU-2-20	2	10	5 250	1 600																						
Mitsubishi MU-2-60	2	10	5 250	1 600																						

Engine Class: Piston-driven

Cessna 404	2	10	3 810	1 000																						
Piper PA31-350	2	10	2 800	900																						
Cessna 402	2	8	3 107	900																						
Aero Commander 500	2	7	3 000	700																						
Cessna 310	2	5	2 400	600																						
Gippsland GA-8	1	7	1 814	800																						
Piper PA31	2	7	2 800	900																						
Beech 58	2	5	2 400	500																						
Cessna 206	1	5	1 600	500																						
Britten-Norman BN-2 Islander	2	9	3 000	1000																						
Cessna 210	1	5	1 600	500																						
Piper PA34	2	5	1900	500																						
Piper PA32	1	5	1 400	500																						
Beech 36	1	5	1 500	570																						
Piper PA23	2	5	2 000	500																						
Ted Smith Aerostar	2	5	2 585	800																						
Cessna 207	1	5	1 600	500																						
Cessna 414	2	8	3 062	900																						
Partenavia P-68	2	5	1 960	600																						
Piper PA-30	2	5	1 600	500																						
Beech Queen Air	2	9	3 800	900																						
Cessna 340	2	6	2 400	600																						
De Havilland Heron	4	16	6 124	1400																						
Cessna 421	2	8	3 062	900																						
Douglas DC-3	2	25	12 700	2500																						
Piper PA28	1	3	1 000	300																						
Beech 55	2	5	2 400	500																						
Cessna 337	2	5	2 400	600																						

(continued)

Table A3 Aircraft movements at regional airports, by aircraft type, 1984 to 2005 (continued)



Engine Class: Piston-driven — *Aircraft movements at regional airports*

Aircraft	*Engine count*	*Standard seat count*	*Standard take-off weight*	*Standard payload weight*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
DHC-2	2	7	2190	700																						
Grumman American AA-5	1	3	998	300																						
Britten-Norman BN-2A Trislander	3	15	4500	1500																						
Cessna 401	2	8	2948	800																						
Piper PA44	2	3	1727	300																						
Piper Aerostar	2	5	2585	800																						
Cessna 182	1	3	1200	350																						
Beech 76	2	3	1800	300																						
Piper PA24	1	5	1400	500																						
Aero Commander 680	2	9	3400	1000																						
Cessna T303	2	6	2400	600																						
Cessna 180	1	3	1200	350																						

Note : The seating figure is an indicative value. The number of available seats on an aircraft is governed by the specifications of the operator and operational reasons such as trade-offs between passengers carried and the maximum range. Therefore, available seating can vary considerably within the same model of aircraft. Payload can be similarly affected.

Source: BITRE time series estimates.

Appendix B

Historical performance of regional air routes and air services

bitre

Appendix B Historical performance of regional air routes and air services

Table B1 Number of regional air routes served, by airline, 1984 to 2005

No. of air routes served

Airline	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Qantas Airways						8			2	40	54	72	73	66	65	77	75	94	99	95	104	96
Regional Express																			67	67	59	59
Jetstar																					27	46
Eastern Australia Airlines	38	34	32	28	36	53	73	44	35	36	26	18	15	20	17	18	31	31	36	49	47	44
Sunstate Airlines	22	21	17	43	59	71	58	21	44	67	67	62	59	59	65	53	73	72	63	51	38	38
MacAir															4	4	20	51	42	49	41	34
Airlines of South Australia	6	7	5												4	5	6	6	4	40	59	32
Virgin Blue																		6	13	20	31	32
Skywest Airlines Pty Ltd	31	28	34	33	32	40	39	36	28	33	43	46	61	48	36	34	33	40	36	44	26	27
Australian Air Express																					18	17
Mission Aviation Fellowship	10	10	10	10	9	7	10	12	13	11	11	11	16	14	16	15	15	13	16	18	16	16
Air North Regional										20	40	39	25	22	31	31	40	57	32	31	18	13
Sunshine Express															1	1	1	7	6	11	13	13
Air Link Pty Ltd								10	14	14	16	18	14	15	13	15	14	15	11	13	12	12
Skippers Aviation																1	4	4	4	4	10	9
Big Sky Express																					10	8
Skytrans Airlines													4	6	7	8	7	7	7	7	7	8
Aboriginal Air Services																		4	6	5	5	6
Sharp Aviation																		3	3	2	4	6
National Jet Systems Pty Ltd												6	7	10	6	4	4	4	4	4	5	5
Tasair															5	4	4	4	4	4	5	4
Golden Eagle Aviation												3	5	6	3						5	4
Great Western Airlines																				7	4	4
O'Connors Air Services	6	6	1	1	2	2	2	2	2	2	2	2	2	2	3	3	4	5	4	4	4	4
Airlines of Tasmania																				2	4	4
Alliance Airlines																			9	11	5	3
Norfolk Jet Express Pty Ltd														2	2	3	2	2	3	2	3	3
Brindabella Airlines																				3	2	3
Vincent Aviation																						3
Emu Air Charter Pty Ltd								1	1	3	3	3	5	1	1	1	1	1	1	3	1	1
Maroomba Airlines															5	4	4	1	1	1	1	1
King Island Airlines							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inland Pacific Air																			1	1	1	1
Aeropelican Air Services						6													2		1	1
Northwest Regional																	6	8	5	4	4	
Redpath Regional																				2	2	
Anindilyakwa Air																		5	5	6	1	
Horizon Airlines															2	5	6		4	9		
Eastland Air								1	2	2	1	1	1	7	8	7	6	6	6	5		
Island Airlines Tasmania																	3	3	3	3		
Impulse Qantaslink																		67	59			
Hazelton Airlines Pty Ltd	14	15	23	25	83	123	114	96	35	49	49	48	39	43	42	37	40	54	41			
Kendell Airlines	16	22	32	40	36	46	45	41	44	33	36	32	38	38	31	32	29	33	23			
Southern Australia Airlines Pty Ltd			5	6	9	9	10	9	9	7	8	8	11	11	11	7	9	9	4			
Flight West Airlines								195	197	164	96	106	102	84	90	86	86	81	3			
Ansett Airlines of Australia	86	72	81	95	93	78	69	76	100	144	182	165	144	124	104	96	108	96	2			
Impulse Airlines	5	6	3	5	4	9	13	48	52	25	23	27	26	22	27	24	24	32				
Country Connection Airlines								3	3	6	8	7	5	5	5	5	5	5				
Western Airlines (WA)						7	4	4	4	4	4	4	4	4	4	4	4	4				
Air Facilities									1	1	2	2	3	2	2	1	1	1				
Transtate Airlines													13	13	15	17	17					
Singleton-Yanda Airlines	6	6	6	6	6	10	6	12	12	19	17	9	9	6	7	6	6					
Island Airlines													3	5	4	5	5					
Whyalla Airlines							3	1	5	5	5	5	4	4	4	4	4					
Broome Airlines																5	3					

(continued)

Table B1 Number of regional air routes served, by airline, 1984 to 2005 (continued)

	No. of air routes served																				
Airline	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Paravion														1	1	3	3					
Ord Air Charter Pty Ltd	13	16	19	15	12	13	11	23	17	15	13	12	12	12	10	13						
Australian Air Charterers Pty Ltd			2	4	7	5	6	6	6	6	7	7	6	10	10	8						
Tasman Australia Airlines															8	6						
Southern Sky														2	6	6						
Geelong Flight Centre												2	2	2	2	2						
Shepparton Airlines														1	1	1						
Kakadu Air															1	1						
Ibis Air																1						
Arnhem Air Charter Pty Ltd	4	3							9	9	9	9	10	10	6							
Tamair									2	2	4	5	6	5	5							
Eyre Charter Pty Ltd	2	5	4	4	4	3	3	2	2	5	3	3	6	4	4							
Rottnest Airbus				1	1	2	2	2	1	1	1	1	1	4	4							
Kentialink Australia														4	4							
Airlines of Tasmania Pty Ltd	26	25	30	31	34	32	39	33	36	29	36	21	21	12								
Augusta Airways Pty Ltd	43	33	29	26	24	25	24	3	3	3	3	3	3	5								
Pacific Interline													2	2								
Albatross Airlines	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
Lincoln Airlines Pty Ltd				1	1	1	1	1	1	1	1	1	1	1								
Executive Air											3	10	5									
Sabair Airlines								1	1	4	5	6	5									
Air Swift									1	1	3	2	1									
Corporate Airlines										1	1	1	1									
SA Regional											1	1	1									
Cape York Air												1	1									
Air Mount Isa											10	9										
Peninsula Air Services										4	15	7										
Qwestair							1	1	1	4	4	5										
Horizon Airways										1	3	3										
Phillip Island Air Charter	1	1	1	1	1	1	1	1	2	2	2	2										
Majestic Airways											3	1										
King Leopold Air												1										
South-West Air												1										
Air Cairns										11	11											
Airtransit-Air Kangaroo Is	5	5	8	8	7	7	7	9	10	5	5											
Goldfields Air Services	6	6	5	5	8	9	8	7	5	5	4											
Air Maroochy Airlines										1	4											
Link Airways								2	2	6	3											
Promair Australia							3	3	2	3	2											
Gawne Airlines											1											
Airlines of Western Australia	64	68	65	78	77	63	71	89	78	70												
Australian Airlines	104	95	97	103	56	53	47	50	52	51												
East West Airlines	63	67	69	78	82	50	62	48	35	24												
Air New South Wales	50	51	75	66	78	67	47	51	34	22												
Air North International Pty Ltd	24	14	25	34	44	31		21	26	17												
Australian Airlink								13	23	17												
Monarch Air									11	12												
Australian Regional Airlines (Qld)					13	17	22	22	13	10												
Western Nsw Airlines Pty Ltd	4	4	6	5	4	4	4	4	5	5												
Southern Pacific Regional Airlines								4	10	4												
Skyport Airlines								5	5	4												
Compass Airlines								4	4	4												
Air Midwest									3	3												
Aquatic Air	4	4	2	2	4	2	1	1	1	1												
Ipec Aviation	2	2	2	2	2	2	2	2	2													
Coast to Coast Airlines									2													
Airlines of Northern Australia	11	10	13	14	16	15	25	22														
Southern Airlines								2														
Macknight Airlines	4	1	1	1	1	3	4	1														
Sunbird Airlines Pty Ltd		20					91															
Falcon Airlines				34	34	35	34															
Queensland Pacific Airlines					3	40	21															
Norfolk Island Airlines Pty Ltd	6	18	13	6	7	11	21															

(continued)

(continued)

Airline	No. of air routes served																				
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Countryair Pty Ltd							21															
Australian Leased						28	19															
Flinders Island Airlines				10	25	28	16															
Ansett Leased						25	14															
Air Central Air					2	4	2															
Chartair	27	26	25		38	38																
Royal Australian Air Force						17																
Piccolo Airlines			12	14	8	6																
Lloyd Aviation Jet Charter Pty Ltd		4	6	10	10	3																
State Air Pty Ltd	9	9	7		2	2																
Foreign Airlines						2																
Crane Airlines	1	1	1	2	2	1																
Sungold Airlines				16	27																	
Air Queensland Ltd	141	86	95	77	24																	
Tillair	24	25	41	38	22																	
Challenge Air Services					6																	
North Australian Air Charter					1																	
Avior Pty Ltd	19	8	11	10																		
Laurie Potter Airlines				10																		
Suncity Airlines			3	3																		
Wudinna Air Services		2	2	2																		
Easter Airways	1	1	1	1																		
Barrack Helicopters			1	1																		
Midstate Airlines			1	1																		
Opal Air Pty Ltd	20	15	7																			
Arrmunda Airways Pty Ltd	6	6	6																			
Murray Valley Airlines	7	5	5																			
Rossair Pty Ltd	7	8	4																			
Regional Airlines			3																			
Pacific Aviation Pty Ltd		1	2																			
Rottnest Airlines		1	1																			
Coddair Airlines Pty Ltd	28	32																				
South Burnett Aviation	4	8																				
Air Whitsunday	2	1																				
Fortescue Air Charter	1	1																				
Henebery Aviation Company	1	1																				
Skymaster Aviation	1	1																				
Avdev Airlines of Australia	18																					
Jan Beers Aviation	7																					
Paggi S Aviation	1																					
Queensland Outback Tourist Services	1																					
Rundle Air Service Pty Ltd	1																					

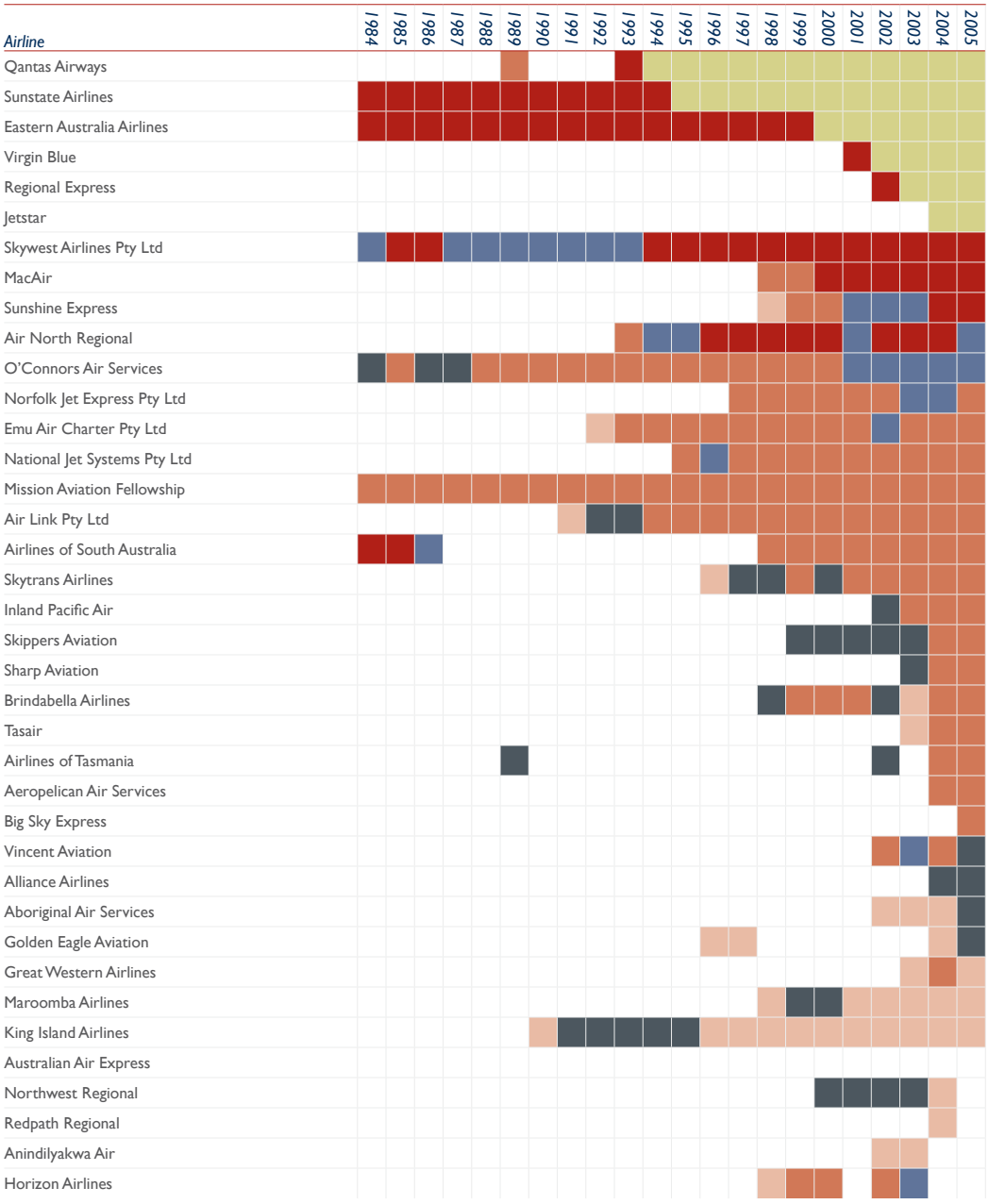
Source: BITRE time series estimates.

Table B2 Regional route density, by airline, 1984 to 2005

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Airlines with no passenger movements recorded	Airlines with between 10 000 to 49 999 passengers a year
Airlines with less than 999 passengers a year	Airlines with between 50 000 to 99 999 passengers a year
Airlines with between 1000 to 4999 passengers a year	Airlines with between 100 000 to 499 999 passengers a year
Airlines with between 5000 to 9999 passengers a year	Airlines with more than 500 000 a year

Route density by airline



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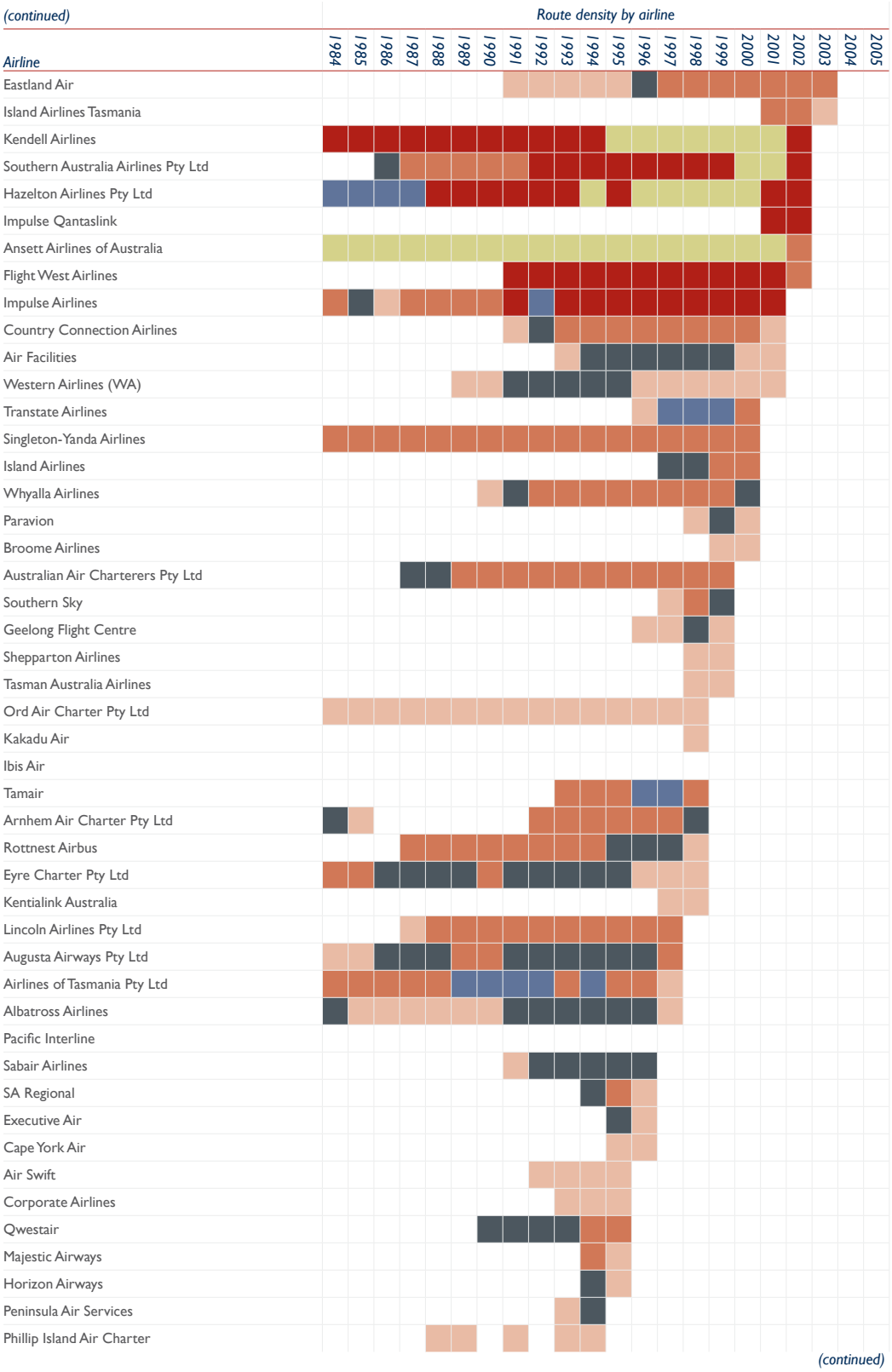


(continued)

Table B2 Regional route density, by airline, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Airlines with between 10 000 to 49 999 passengers a year
Airlines with less than 999 passengers a year	Airlines with between 50 000 to 99 999 passengers a year
Airlines with between 1000 to 4999 passengers a year	Airlines with between 100 000 to 499 999 passengers a year
Airlines with between 5000 to 9999 passengers a year	Airlines with more than 500 000 a year

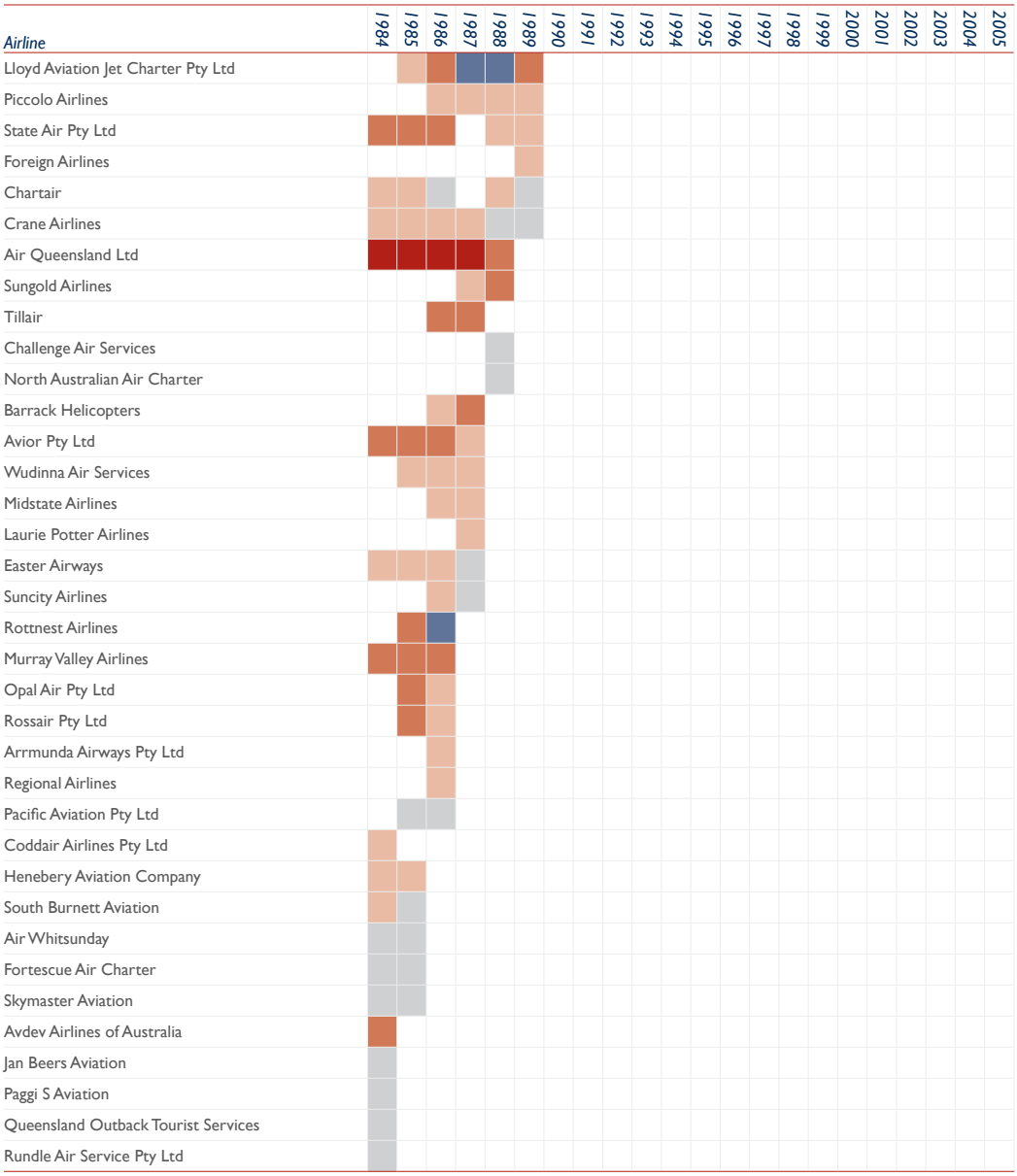
Route density by airline

Airline	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Air Mount Isa																						
King Leopold Air																						
South-west Air																						
Airtransit-Air Kangaroo Is																						
Promair Australia																						
Link Airways																						
Air Maroochy Airlines																						
Air Cairns																						
Goldfields Air Services																						
Gawne Airlines																						
Australian Airlines																						
Airlines of Western Australia																						
East West Airlines																						
Air New South Wales																						
Australian Airlink																						
Australian Regional Airlines (Qld)																						
Compass Airlines																						
Southern Pacific Regional Airlines																						
Western NSW Airlines Pty Ltd																						
Air North International Pty Ltd																						
Monarch Air																						
Skyport Airlines																						
Aquatic Air																						
Air Midwest																						
Ipec Aviation																						
Coast to Coast Airlines																						
Airlines of Northern Australia																						
Macknight Airlines																						
Southern Airlines																						
Australian Leased																						
Queensland Pacific Airlines																						
Ansett Leased																						
Norfolk Island Airlines Pty Ltd																						
Sunbird Airlines Pty Ltd																						
Falcon Airlines																						
Flinders Island Airlines																						
Countryair Pty Ltd																						
Air Central Air																						
Royal Australian Air Force																						

(continued)

(continued)

Route density by airline



Source: BITRE time series estimates.

Table B3 Route density, by intrastate regional air route, 1984 to 2005

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

New South Wales *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Coffs Harbour	Sydney	443																						
Albury	Sydney	452																						
Dubbo	Sydney	310																						
Sydney	Wagga Wagga	367																						
Ballina	Sydney	612																						
Sydney	Tamworth	320																						
Armidale	Sydney	382																						
Port Macquarie	Sydney	321																						
Orange	Sydney	200																						
Lismore	Sydney	602																						
Griffith	Sydney	472																						
Williamtown	Sydney	142																						
Sydney	Taree	260																						
Norfolk Island	Sydney	1680																						
Bathurst	Sydney	153																						
Moree	Sydney	510																						
Moruya	Sydney	237																						
Merimbula	Moruya	115																						
Lord Howe Island	Sydney	787																						
Moree	Narrabri	91																						
Narrabri	Sydney	423																						
Griffith	Narrandera	64																						
Narrandera	Sydney	438																						
Broken Hill	Dubbo	671																						
Armidale	Tamworth	96																						
Parkes	Sydney	287																						
Merimbula	Sydney	349																						
Gunnedah	Sydney	343																						
Gunnedah	Inverell	147																						
Coffs Harbour	Port Macquarie	126																						
Grafton	Taree	242																						
Cooma	Sydney	330																						
Albury	Wagga Wagga	110																						
Bathurst	Parkes	135																						
Mudgee	Sydney	212																						
Cobar	Dubbo	273																						
Bourke	Cobar	168																						
Coffs Harbour	Lord Howe Island	586																						

(continued)

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sydney	West Wyalong	368																						
Lismore	Ballina	30																						
Coffs Harbour	Williamtown	301																						
Bathurst	Orange	49																						
Coonamble	Dubbo	138																						
Coffs Harbour	Ballina	171																						
Williamtown	Port Macquarie	180																						
Dubbo	Parkes	106																						
Coonamble	Walgett	109																						
Bathurst	Dubbo	167																						
Griffith	Wagga Wagga	163																						
Orange	Parkes	88																						
Broken Hill	Sydney	932																						
Lightning Ridge	Walgett	65																						
Dubbo	Walgett	247																						
Bourke	Dubbo	348																						
Dubbo	Lightning Ridge	312																						
Lord Howe Island	Port Macquarie	591																						
Narrabri	Tamworth	129																						
Port Macquarie	Ballina	297																						
Coonabarabran	Gunnedah	103																						
Moree	Tamworth	201																						
Dubbo	Mudgee	105																						
Grafton	Inverell	182																						
Albury	Williamtown	577																						
Williamtown	Tamworth	212																						
Armidale	Williamtown	253																						
Cobar	Sydney	571																						
Orange	West Wyalong	190																						
Parkes	West Wyalong	132																						
Dubbo	Williamtown	313																						
Narrabri	Williamtown	335																						
Grafton	Sydney	497																						
Lismore	Port Macquarie	292																						
Coffs Harbour	Grafton	63																						
Kempsey	Taree	96																						
Griffith	Orange	299																						
Dubbo	Orange	140																						
Coonamble	Lightning Ridge	174																						
Coffs Harbour	Lismore	166																						
Williamtown	Ballina	470																						
Narrandera	Wagga Wagga	102																						
Kempsey	Sydney	355																						
Armidale	Coffs Harbour	146																						
Armidale	Moree	206																						
Moree	Williamtown	412																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																				
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Ballina	Tamworth	362																						
Gunnedah	Taree	238																						
Grafton	Ballina	115																						
Williamtown	Taree	119																						
Inverell	Tamworth	136																						
Glen Innes	Inverell	58																						
Port Macquarie	Taree	61																						
Glen Innes	Tamworth	176																						
Armidale	Inverell	84																						
Armidale	Glen Innes	95																						
Coffs Harbour	Tamworth	233																						
Bourke	Lightning Ridge	207																						
Port Macquarie	Tamworth	196																						
Cobar	Lightning Ridge	313																						
Grafton	Kempsey	146																						
Williamtown	Cooma	470																						
Inverell	Sydney	451																						
Cudal	Orange	36																						
Bathurst	Cudal	83																						
Griffith	Parkes	237																						
Tamworth	Taree	182																						
Coonamble	Sydney	421																						
Grafton	Williamtown	356																						
Dubbo	Tamworth	250																						
Dubbo	Griffith	325																						
Broken Hill	Tamworth	896																						
Bathurst	Griffith	345																						
Belmont	Williamtown	31																						
Cudal	Griffith	273																						
Narrandera	Orange	283																						
Casino	Sydney	591																						
Casino	Lismore	20																						
Kempsey	Port Macquarie	43																						
Cowra	Sydney	234																						
Forbes	Sydney	307																						
Casino	Ballina	49																						
Cowra	Young	59																						
Forbes	West Wyalong	94																						

(continued)

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cootamundra	Young	45																						
Dubbo	Nyngan	149																						
Cobar	Nyngan	134																						
Brewarrina	Dubbo	300																						
Bourke	Brewarrina	84																						
Armidale	Lismore	247																						
Grafton	Tamworth	256																						
Coffs Harbour	Taree	184																						
Glen Innes	Sydney	477																						
Armidale	Casino	230																						
Kempsey	Williamtown	213																						
Glen Innes	Williamtown	347																						
Albury	Griffith	218																						
Casino	Tamworth	325																						
Broken Hill	Parkes	648																						
Casino	Port Macquarie	285																						
Cudal	Tamworth	312																						
Inverell	Williamtown	330																						
Sydney	West Maitland	141																						
Scone	Singleton	71																						
Singleton	West Maitland	30																						
Deniliquin	Sydney	598																						
Williamtown	Wollongong	219																						
Cudal	Parkes	52																						
Singleton	Sydney	150																						
Lord Howe Island	Williamtown	697																						
Cudal	Sydney	235																						
Lord Howe Island	Norfolk Island	896																						
Scone	West Maitland	96																						
Lord Howe Island	Ballina	610																						
Brewarrina	Cobar	200																						
Albury	Deniliquin	190																						
Cudal	Mudgee	111																						
Bathurst	Mudgee	94																						
Cudal	Dubbo	119																						
Scone	Sydney	215																						
Albury	Narrandera	157																						
Albury	Corowa	55																						
Mudgee	Parkes	143																						
Corowa	Sydney	496																						
Gunnedah	Tamworth	59																						
Merimbula	Cooma	107																						
Coonabarabran	Sydney	342																						
Lismore	Williamtown	461																						
Brewarrina	Nyngan	179																						
Dubbo	Wagga Wagga	344																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Broken Hill	Cobar	413																						
Condobolin	Forbes	75																						
Forster	Sydney	229																						
Condobolin	West Wyalong	97																						
Coffs Harbour	Norfolk Island	1440																						
Mudgee	Orange	101																						
Griffith	Hay	119																						
Forster	Tamworth	199																						
Bourke	Nyngan	206																						
Armidale	Grafton	161																						
Deniliquin	Wagga Wagga	233																						
Cessnock	Sydney	130																						
Sydney	Wee Waa	443																						
Albury	Merimbula	280																						
Sydney	Quirindi	279																						
Cessnock	Scone	96																						
Cessnock	West Maitland	17																						
Forster	Taree	35																						
Scone	Quirindi	67																						
Cessnock	Quirindi	163																						
Deniliquin	Griffith	178																						
Albury	Moruya	288																						
Cessnock	Singleton	25																						
Temora	West Wyalong	61																						
Armidale	Narrabri	174																						
Gunnedah	Wee Waa	112																						
Deniliquin	Hay	115																						
Deniliquin	Narrandera	171																						
Hay	Narrandera	156																						
Dubbo	Moree	326																						
Cootamundra	Sydney	299																						
Bankstown	Kempsey	361																						
Bankstown	Wagga Wagga	352																						
Palm Beach	Rose Bay	32																						
Hay	Wagga Wagga	252																						
Bankstown	Tamworth	316																						
Brewarrina	Coonamble	187																						
Bathurst	Wagga Wagga	280																						

(continued)

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Singleton	Quirindi	138																						
Gunnedah	Quirindi	65																						
Coffs Harbour	Casino	160																						
Lismore	Tamworth	342																						
Lismore	Taree	348																						
Ballina	Taree	354																						
Bourke	Walgett	209																						
Albury	Ballina	1015																						
Corowa	Wagga Wagga	136																						
Glen Innes	Moree	180																						
Lord Howe Island	Taree	624																						
Young	Sydney	272																						
Cowra	Orange	68																						
Forbes	Orange	111																						
Forbes	Parkes	38																						
Coonabarabran	Mudgee	141																						
Cowra	Forbes	85																						
Cowra	West Wyalong	135																						
Nyngan	Sydney	458																						
Condobolin	Orange	182																						
Bourke	Sydney	657																						
Condobolin	Parkes	96																						
Cootamundra	Cowra	104																						
Coonamble	Nyngan	128																						
Cudal	Forbes	78																						
Cowra	Parkes	88																						
Mudgee	Gunnedah	189																						
Cobar	Coonamble	253																						
Cootamundra	Orange	171																						
Cudal	Young	120																						
Young	Orange	127																						
Coonabarabran	Dubbo	118																						
Sydney	Temora	342																						
Young	Temora	70																						
Brewarrina	Lightning Ridge	127																						
Cootamundra	Temora	53																						
Mudgee	Quirindi	146																						
Cudal	West Wyalong	164																						
Norfolk Island	Williamtown	1593																						
Cootamundra	Cudal	165																						
Coonabarabran	Orange	228																						
Orange	Temora	189																						
Temora	Wagga Wagga	83																						
Quirindi	West Maitland	162																						
Wagga Wagga	West Wyalong	139																						
Brewarrina	Sydney	604																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Condobolin	Sydney	381																						
Sydney	Walgett	522																						
Tumut	Wagga Wagga	71																						
Dubbo	Narrabri	242																						
Albury	Coffs Harbour	859																						
Brewarrina	Walgett	126																						
Cobar	Walgett	279																						
Cootamundra	Forbes	141																						
Cootamundra	West Wyalong	109																						
Cudal	Cowra	65																						
Lightning Ridge	Sydney	584																						
Young	West Wyalong	104																						
Albury	Dubbo	453																						
Armidale	Dubbo	345																						
Broken Hill	Bourke	480																						
Bathurst	Williamtown	215																						
Bathurst	Tamworth	282																						
Forbes	Young	104																						
Young	Parkes	125																						
Nyngan	Walgett	190																						
Grafton	Port Macquarie	187																						
Cooma	Wagga Wagga	186																						
Casino	Williamtown	450																						
Armidale	Gunnedah	139																						
Armidale	Orange	395																						
Cobar	Cootamundra	401																						
Condobolin	Cootamundra	190																						
Condobolin	Cowra	159																						
Condobolin	Young	164																						
Coffs Harbour	Glen Innes	155																						
Cootamundra	Parkes	167																						
Coonamble	Young	364																						
Casino	Taree	338																						
Cudal	Nyngan	242																						
Cowra	Dubbo	181																						
Dubbo	Gunnedah	212																						
Dubbo	Ballina	608																						
Dubbo	West Wyalong	231																						

(continued)

New South Wales (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gosford	Palm Beach	22																						
Williamtown	West Maitland	34																						
Armidale	Port Macquarie	156																						
Condobolin	Cudal	147																						
Sydney	Tumut	307																						
Albury	Cooma	183																						
Cobar	Condobolin	216																						
Cowra	Temora	123																						
Dubbo	Forbes	141																						
Coffs Harbour	Dubbo	481																						
Grafton	Lismore	106																						
Broken Hill	Walgett	671																						
Belmont	Coffs Harbour	332																						
Bourke	Condobolin	357																						
Bourke	Coonamble	255																						
Bourke	Orange	478																						
Brewarrina	Orange	438																						
Condobolin	Coonamble	255																						
Coffs Harbour	Wagga Wagga	755																						
Cootamundra	Dubbo	272																						
Coonamble	Orange	276																						
Coonabarabran	Quirindi	121																						
Goulburn	Sydney	164																						
Williamtown	Rose Bay	130																						
Coonamble	Coonabarabran	93																						
Coonabarabran	Walgett	181																						
Condobolin	Dubbo	158																						
Nowra	Sydney	126																						
Cobar	Orange	375																						
Gosford	Williamtown	79																						
Gunnedah	Walgett	229																						
Cobar	Parkes	290																						
Nyngan	Parkes	201																						
Condobolin	Temora	154																						
Inverell	Taree	258																						
Broken Hill	Narrandera	557																						
Kempsey	Tamworth	186																						
Armidale	Taree	173																						
Williamtown	Wagga Wagga	482																						
Broken Hill	Williamtown	979																						
Coonabarabran	Williamtown	292																						
Griffith	Williamtown	559																						
Merimbula	Narrandera	393																						
Narrandera	Cooma	286																						
Evans Head	Sydney	579																						
Coffs Harbour	Evans Head	139																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

New South Wales (continued) — *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Palm Beach	Port Stephens	99																						
Gosford	Port Stephens	78																						
Armidale	Kempsey	127																						
Broken Hill	Wilcannia	189																						
Bourke	Parkes	407																						
Brewarrina	Parkes	376																						
Cobar	Wilcannia	229																						
Deniliquin	Tocumwal	65																						

Northern Territory

Alice Springs	Darwin	1305																						
Darwin	Gove	647																						
Alice Springs	Ayers Rock	334																						
Darwin	Maningrida	367																						
Darwin	Groote Eylandt	630																						
Darwin	Mcarthur River	718																						
Gove	Groote Eylandt	193																						
Milingimbi	Maningrida	72																						
Darwin	Katherine-Tindal	285																						
Alice Springs	Tennant Creek	464																						
Elcho Island	Gove	139																						
Elcho Island	Milingimbi	75																						
Elcho Island	Lake Evella	59																						
Gove	Lake Evella	113																						
Maningrida	Ramingining	78																						
Elcho Island	Ramingining	82																						
Katherine-Tindal	Victoria River Downs	256																						
Alice Springs	Yuendumu	277																						
Kalkgurung	Victoria River Downs	116																						
Darwin	Tennant Creek	876																						
Katherine-Tindal	Tennant Creek	599																						
Milingimbi	Ramingining	27																						
Groote Eylandt	Numbulwar	87																						
Elcho Island	Maningrida	146																						
Gove	Milingimbi	211																						
Gove	Numbulwar	252																						
Gove	Ramingining	210																						

(continued)

Northern Territory (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Hooker Creek	Kalkgurung	102																						
Lake Evella	Ramingining	101																						
Alice Springs	Katherine-Tindal	1043																						
Ayers Rock	Darwin	1418																						
Darwin	Elcho Island	513																						
Lake Evella	Milingimbi	109																						
Bathurst Island	Darwin	77																						
Hooker Creek	Yuendumu	451																						
Lake Evella	Maningrida	178																						
Garden Point	Snake Bay	25																						
Darwin	Snake Bay	113																						
Darwin	Garden Point	123																						
Bathurst Island	Garden Point	46																						
Katherine-Tindal	Roper River	256																						
Darwin	Milingimbi	438																						
Borroloola	Roper River	225																						
Numbulwar	Roper River	116																						
Borroloola	Numbulwar	210																						
Gove	Maningrida	283																						
Jabiru	Maningrida	160																						
Croker Island	Snake Bay	202																						
Groote Eylandt	Katherine-Tindal	445																						
Darwin	Lake Evella	536																						
Ayers Rock	Groote Eylandt	1371																						
Kalkgurung	Katherine-Tindal	364																						
Darwin	Ramingining	437																						
Croker Island	Darwin	223																						
Croker Island	South Goulburn Is	113																						
Darwin	South Goulburn Is	285																						
South Goulburn Is	Maningrida	103																						
Groote Eylandt	Lake Evella	179																						
Hooker Creek	Katherine-Tindal	462																						
Bathurst Island	Snake Bay	39																						
Borroloola	Katherine-Tindal	456																						
Katherine-Tindal	Numbulwar	361																						
Hooker Creek	Victoria River Downs	218																						
Lake Evella	Numbulwar	197																						
Elcho Island	South Goulburn Is	242																						
South Goulburn Is	Milingimbi	172																						
Croker Island	Elcho Island	351																						
Croker Island	Ramingining	294																						
South Goulburn Is	Snake Bay	299																						
Groote Eylandt	Maningrida	322																						
Numbulwar	Victoria River Downs	559																						
Alice Springs	Kings Canyon	250																						
Ayers Rock	Kings Canyon	115																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Northern Territory (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																				
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Borroloola	Darwin	713																						
Darwin	Jabiru	221																						
Elcho Island	Groote Eylandt	237																						
Jabiru	Ramingining	220																						
Jabiru	Milingimbi	226																						
Darwin	Oenpelli	232																						
Jabiru	Oenpelli	39																						
Bickerton Island	Gove	179																						
Bickerton Island	Groote Eylandt	36																						
South Goulburn Is	Oenpelli	85																						
Borroloola	Mcarthur River	47																						
Austral Downs	Lake Nash	56																						
Austral Downs	Manners Creek	180																						
Borroloola	Wollogorang	215																						
Katherine-Tindal	Mcarthur River	451																						
Katherine-Tindal	Wollogorang	665																						
Mcarthur River	Roper River	239																						
Mcarthur River	Wollogorang	214																						
Darwin	Wollogorang	927																						
Bathurst Island	South Goulburn Is	302																						
Alice Springs	Groote Eylandt	1124																						
Oenpelli	Ramingining	205																						
Darwin	Peppimenarti	210																						
Darwin	Port Keats	251																						
Alice Springs	Willowra	313																						
Andado	New Crown	54																						
Andado	Numery	155																						
Alcoota	Alice Springs	122																						
Alcoota	Mount Swan	65																						
Ammaroo	Elkedra	67																						
Ammaroo	Utopia	88																						
Annitowa	Argadargada	58																						
Annitowa	Elkedra	105																						
Argadargada	Ooratippra	67																						
Alice Springs	Finke	210																						
Alice Springs	Mount Riddock	117																						
Alice Springs	Numery	156																						
Baikaal Station	Jervois Mine	18																						

(continued)

Northern Territory (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Baikaal Station	Jervois	15					■	■																
Calvert Hills	Kiana	143					■	■																
Calvert Hills	Redbank Mine	44					■	■																
Dry Creek	Nudgiburra	28					■	■																
Dry Creek	Wollogorang	62					■	■																
Delmore Downs	Mount Swan	29					■	■																
Delmore Downs	Utopia	34					■	■																
Finke	Lilla Creek	59					■	■																
Jervois Mine	Lucy Creek Station	20					■	■																
Kiana	Mallapunyah Springs	30					■	■																
Lilla Creek	Umbeara	38					■	■																
Lucy Creek Station	Ooratippra	66					■	■																
Mount Allen	Mount Denison	19					■	■																
Mount Denison	Rabbit Flat	304					■	■																
Mallapunyah Springs	Walhallow	91					■	■																
Nudgiburra	Tennant Creek	441					■	■																
Redbank Mine	Wollogorang	17					■	■																
Rabbit Flat	Willowra	296					■	■																
Tennant Creek	Ucharonidge	218					■	■																
Tieyon	Umbeara	56					■	■																
Ucharonidge	Walhallow	151					■	■																
Gove	Katherine-Tindal	542	■	■	■	■	■																	
Hooker Creek	Wave Hill	116	■	■	■	■	■																	
Kalkgurung	Wave Hill	33	■	■	■	■	■																	
Victoria River Downs	Wave Hill	111	■	■	■	■	■																	
Cooinda	Darwin	188	■		■	■	■																	
Groote Eylandt	Roper River	203	■		■	■	■																	
Cooinda	Jabiru	48			■	■	■																	
Cooinda	Oenpelli	82			■	■	■																	
Elcho Island	Jabiru	300			■	■	■																	
Cooinda	Ramingining	264				■	■																	
Gove	Roper River	353				■	■																	
Lake Evella	Oenpelli	305			■		■																	
Alice Springs	Docker River	499	■	■	■	■																		
Alice Springs	Kintore	456	■	■	■	■																		
Alice Springs	Papunya	213	■	■	■	■																		
Docker River	Kintore	179	■	■	■	■																		
Katherine-Tindal	Wave Hill	346	■	■	■	■																		
Papunya	Yuendumu	111	■	■	■	■																		
Cooinda	Katherine-Tindal	180	■		■	■																		
Cape Don	Darwin	157				■																		
Cape Don	Snake Bay	123				■																		
Darwin	Murgenella	242				■																		
Darwin	Mudginbarry	217				■																		
Darwin	Smith Point	198				■																		
Katherine-Tindal	Oenpelli	253				■																		

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Northern Territory (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Murgenella	Snake Bay	248																						
Mudginbarry	Snake Bay	275																						
Areyonga	Alice Springs	169																						
Alice Springs	Haasts Bluff	213																						
Ayers Rock	Docker River	191																						
Areyonga	Haasts Bluff	80																						
Haasts Bluff	Papunya	24																						
Areyonga	Papunya	98																						
Alice Springs	Mount Denison	264																						
Alice Springs	Napperby	183																						
Ayers Rock	Kintore	261																						
Ayers Rock	Mount Denison	356																						
Ayers Rock	Napperby	347																						
Jabiru	Katherine-Tindal	214																						
Mount Denison	Papunya	124																						
Mount Denison	Yuendumu	32																						
Docker River	Yuendumu	397																						
Willowra	Yuendumu	141																						
Borroloola	Nathan River	119																						
Elcho Island	Garden Point	566																						
South Goulburn Is	Ramingining	181																						
Haasts Bluff	Yuendumu	133																						

Queensland

Brisbane	Cairns	1391																						
Brisbane	Townsville	1112																						
Brisbane	Rockhampton	518																						
Brisbane	Mackay	797																						
Brisbane	Gladstone	434																						
Cairns	Townsville	284																						
Brisbane	Hamilton Island	888																						
Brisbane	Proserpine	895																						
Bundaberg	Brisbane	287																						
Brisbane	Mount Isa	1573																						
Mackay	Townsville	330																						
Mackay	Rockhampton	279																						
Brisbane	Emerald	653																						

(continued)

Queensland (continued)

Route density

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Brisbane	Maryborough	212																						
Cairns	Weipa	623																						
Cairns	Dunk Island	124																						
Gladstone	Rockhampton	94																						
Cairns	Thursday Island	793																						
Mount Isa	Townsville	778																						
Brisbane	Roma	441																						
Brisbane	Hervey Bay	231																						
Cairns	Cooktown	171																						
Brisbane	Longreach	991																						
Cairns	Hamilton Island	512																						
Hervey Bay	Maryborough	27																						
Palm Island	Townsville	59																						
Brisbane	Maroochydore	87																						
Cloncurry	Townsville	674																						
Cloncurry	Mount Isa	106																						
Blackwater	Emerald	65																						
Blackwater	Brisbane	603																						
Brisbane	Thangool	409																						
Cairns	Lizard Island	247																						
Charleville	Roma	251																						
Cairns	Normanton	506																						
Brisbane	Moranbah	780																						
Doomadgee	Mount Isa	311																						
Normanton	Mornington Island	232																						
Bundaberg	Gladstone	160																						
Cairns	Kowanyama	456																						
Doomadgee	Mornington Island	145																						
Blackall	Brisbane	838																						
Brisbane	Charleville	689																						
Barcaldine	Brisbane	892																						
Burketown	Mornington Island	126																						
Edward River	Kowanyama	67																						
Hughenden	Townsville	317																						
Burketown	Doomadgee	79																						
Aurukun	Cairns	584																						
Cairns	Edward River	495																						
Cairns	Iron Range	526																						
Charleville	Quilpie	201																						
Cairns	Yorke Island	833																						
Cairns	Karumba	527																						
Blackall	Longreach	160																						
Barcaldine	Longreach	106																						
Quilpie	Windorah	207																						
Brisbane	Oakey	136																						
Oakey	Saint George	318																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cairns	Mount Isa	782																						
Hervey Bay	Maroochydore	144																						
Townsville	Winton	516																						
Hughenden	Richmond	116																						
Maryborough	Maroochydore	127																						
Hamilton Island	Townsville	260																						
Julia Creek	Richmond	145																						
Mount Isa	Julia Creek	233																						
Bundaberg	Rockhampton	252																						
Longreach	Winton	171																						
Yorke Island	Thursday Island	156																						
Birdsville	Windorah	337																						
Cairns	Coen	448																						
Boulia	Mount Isa	253																						
Bedourie	Boulia	168																						
Bedourie	Birdsville	170																						
Cunnamulla	Saint George	292																						
Cunnamulla	Thargomindah	178																						
Emerald	Rockhampton	235																						
Thursday Island	Weipa	236																						
Cairns	Gold Coast	1484																						
Boulia	Birdsville	336																						
Bedourie	Glengyle	50																						
Birdsville	Roseberth	31																						
Birdsville	Glengyle	124																						
Boulia	Roseberth	325																						
Birdsville	Durrie	93																						
Boulia	Durrie	302																						
Durham Downs	Ballera	37																						
Cairns	Rockhampton	874																						
Emerald	Longreach	399																						
Cairns	Maroochydore	1318																						
Birdsville	Durham Downs	286																						
Rockhampton	Townsville	599																						
Hamilton Island	Proserpine	44																						
Gold Coast	Townsville	1204																						
Hamilton Island	Gold Coast	982																						
Maroochydore	Gold Coast	178																						

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Thursday Island	Townsville	1075																						
Proserpine	Townsville	233																						
Maroochydore	Rockhampton	445																						
Emerald	Maroochydore	599																						
Barcaldine	Emerald	293																						
Hervey Bay	Rockhampton	325																						
Maroochydore	Townsville	1042																						
Moranbah	Townsville	341																						
Brisbane	Cloncurry	1483																						
Bundaberg	Hervey Bay	73																						
Hamilton Island	Rockhampton	371																						
Emerald	Gladstone	312																						
Hamilton Island	Mackay	93																						
Durrie	Roseberth	62																						
Cairns	Mackay	597																						
Blackall	Emerald	296																						
Maryborough	Thangool	244																						
Durrie	Glengyle	109																						
Bedourie	Durrie	157																						
Boulia	Glengyle	212																						
Arrabury	Ballera	109																						
Bedourie	Sandringham	54																						
Boulia	Durham Downs	504																						
Boulia	Sandringham	152																						
Birdsville	Ballera	297																						
Mount Isa	Maroochydore	1535																						
Brampton Island	Mackay	42																						
Cloncurry	Julia Creek	127																						
Mackay	Proserpine	100																						
Longreach	Roma	570																						
Gladstone	Maroochydore	357																						
Gladstone	Hervey Bay	233																						
Gladstone	Townsville	690																						
Julia Creek	Townsville	551																						
Bundaberg	Maroochydore	204																						
Bedourie	Roseberth	163																						
Julia Creek	Rockhampton	952																						
Brisbane	Toowoomba	120																						
Saint George	Toowoomba	332																						
Proserpine	Rockhampton	377																						
Gladstone	Mackay	366																						
Bundaberg	Maryborough	79																						
Barcaldine	Blackall	96																						
Mount Isa	Mackay	1010																						
Brisbane	Winton	1156																						
Brisbane	Birdsville	1380																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																				
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Barcaldine	Roma	481																						
Mount Isa	Longreach	582																						
Mount Isa	Normanton	370																						
Bundaberg	Cairns	1122																						
Birdsville	Winton	546																						
Clermont	Cairns	682																						
Bundaberg	Mackay	525																						
Brisbane	Saint George	452																						
Mount Isa	Winton	418																						
Maroochydore	Proserpine	821																						
Emerald	Roma	336																						
Charleville	Winton	553																						
Birdsville	Longreach	569																						
Cloncurry	Rockhampton	1072																						
Bamaga	Cairns	749																						
Karumba	Normanton	36																						
Karumba	Mornington Island	198																						
Brampton Island	Hamilton Island	60																						
Bamaga	Thursday Island	44																						
Cairns	Proserpine	498																						
Gladstone	Thangool	96																						
Cloncurry	Richmond	272																						
Hughenden	Mount Isa	494																						
Mount Isa	Richmond	378																						
Richmond	Townsville	415																						
Cloncurry	Hughenden	388																						
Hughenden	Julia Creek	261																						
Longreach	Townsville	531																						
Bedourie	Mount Isa	412																						
Gladstone	Maryborough	237																						
Brisbane	Quilpie	884																						
Birdsville	Quilpie	497																						
Maroochydore	Mackay	723																						
Bundaberg	Emerald	446																						
Bundaberg	Blackwater	384																						
Bundaberg	Thangool	182																						
Emerald	Thangool	265																						
Gladstone	Longreach	710																						

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Mount Isa	Windorah	620																						
Cloncurry	Cairns	695																						
Blackwater	Maroochydore	545																						
Blackall	Roma	411																						
Longreach	Quilpie	352																						
Mount Isa	Mornington Island	445																						
Maryborough	Rockhampton	328																						
Cairns	Mornington Island	703																						
Emerald	Maryborough	508																						
Hamilton Island	Mount Isa	987																						
Roma	Quilpie	450																						
Hughenden	Roma	787																						
Mount Isa	Roma	1150																						
Charleville	Longreach	387																						
Charleville	Windorah	377																						
Bamaga	Weipa	201																						
Mount Isa	Rockhampton	1173																						
Blackwater	Hervey Bay	454																						
Bundaberg	Townsville	850																						
Emerald	Mackay	285																						
Hervey Bay	Thangool	250																						
Clermont	Mackay	239																						
Gladstone	Proserpine	465																						
Boulia	Longreach	452																						
Boulia	Winton	333																						
Clermont	Proserpine	270																						
Coen	Iron Range	110																						
Brisbane	Windorah	1065																						
Cunnamulla	Toowoomba	623																						
Saint George	Thargomindah	470																						
Birdsville	Mount Isa	581																						
Blackall	Quilpie	269																						
Blackwater	Gladstone	247																						
Hamilton Island	Maroochydore	812																						
Emerald	Townsville	501																						
Emerald	Hervey Bay	515																						
Hughenden	Winton	209																						
Barcaldine	Thangool	546																						
Barcaldine	Quilpie	354																						
Great Keppel Island	Rockhampton	53																						
Dunk Island	Townsville	160																						
Brampton Island	Townsville	314																						
Blackall	Charleville	236																						
Great Keppel Island	Townsville	615																						
Barcaldine	Charleville	331																						
Bedourie	Windorah	343																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																				
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Toowoomba	Windorah	952																						
Toowoomba	Thargomindah	800																						
Cunnamulla	Charleville	191																						
Toowoomba	Quilpie	767																						
Iron Range	Thursday Island	268																						
Gold Coast	Rockhampton	612																						
Bedourie	Brisbane	1407																						
Bedourie	Charleville	720																						
Brisbane	Cunnamulla	743																						
Birdsville	Toowoomba	1263																						
Emerald	Winton	539																						
Blackwater	Rockhampton	171																						
Bamaga	Iron Range	224																						
Charleville	Toowoomba	575																						
Cairns	Gladstone	963																						
Brampton Island	Proserpine	83																						
Blackwater	Cairns	811																						
Cairns	Hope Vale	189																						
Mount Isa	Karumba	383																						
Brampton Island	Rockhampton	312																						
Brampton Island	Great Keppel Island	315																						
Burketown	Karumba	142																						
Great Keppel Island	Mackay	288																						
Burketown	Mount Isa	324																						
Doomadgee	Karumba	220																						
Cairns	Doomadgee	746																						
Birdsville	Charleville	693																						
Doomadgee	Normanton	240																						
Boulia	Charleville	752																						
Maroochydore	Thangool	344																						
Roma	Toowoomba	331																						
Augustus Downs	Burketown	90																						
Augustus Downs	Iffley	149																						
Burketown	Lawn Hill	132																						
Iffley	Mount Isa	267																						
Mount Isa	Lawn Hill	250																						
Karumba	Kowanyama	240																						
Gold Coast	Proserpine	989																						

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Townsville	Weipa	895																						
Mackay	Gold Coast	891																						
Great Keppel Island	Gladstone	82																						
Bundaberg	Proserpine	624																						
Brisbane	Weipa	2007																						
Boulia	Quilpie	602																						
Dunk Island	Lizard Island	369																						
Roma	Thangool	291																						
Kubin Village	Thursday Island	39																						
Badu Island	Thursday Island	54																						
Darnley Island	Yorke Island	42																						
Coconut Island	Thursday Island	106																						
Thursday Island	Yam Island	93																						
Thursday Island	Saibai Island	138																						
Badu Island	Boigu Island	93																						
Boigu Island	Thursday Island	145																						
Darnley Island	Thursday Island	197																						
Yorke Island	Yam Island	74																						
Rockhampton	Thangool	124																						
Burketown	Normanton	163																						
Mount Isa	Gold Coast	1646																						
Blackall	Winton	331																						
Coen	Thursday Island	364																						
Bamaga	Coen	320																						
Augustus Downs	Lawn Hill	130																						
Thursday Island	Sue Island	74																						
Coconut Island	Yorke Island	51																						
Coconut Island	Yam Island	38																						
Sue Island	Yam Island	36																						
Badu Island	Kubin Village	21																						
Badu Island	Mabuiag Island	19																						
Aurukun	Coen	157																						
Murray Island	Yorke Island	72																						
Boigu Island	Mabuiag Island	74																						
Boigu Island	Saibai Island	45																						
Darnley Island	Murray Island	48																						
Mabuiag Island	Saibai Island	79																						
Blackwater	Thangool	205																						
Badu Island	Coconut Island	103																						
Darnley Island	Sue Island	123																						
Mabuiag Island	Thursday Island	72																						
Yorke Island	Sue Island	82																						
Bamaga	Badu Island	98																						
Saibai Island	Yam Island	60																						
Bamaga	Kubin Village	81																						
Badu Island	Saibai Island	96																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Boigu Island	Kubin Village	106																						
Coconut Island	Darnley Island	91																						
Coconut Island	Murray Island	107																						
Coconut Island	Sue Island	32																						
Darnley Island	Yam Island	115																						
Kubin Village	Mabuiag Island	34																						
Kubin Village	Saibai Island	101																						
Murray Island	Thursday Island	207																						
Murray Island	Sue Island	136																						
Murray Island	Yam Island	141																						
Charters Towers	Hughenden	230																						
Charters Towers	Townsville	102																						
Hughenden	Longreach	291																						
Charters Towers	Julia Creek	480																						
Charters Towers	Mount Isa	712																						
Bamaga	Coconut Island	121																						
Bamaga	Mabuiag Island	115																						
Badu Island	Yorke Island	145																						
Badu Island	Sue Island	77																						
Kubin Village	Sue Island	60																						
Mabuiag Island	Yam Island	64																						
Saibai Island	Sue Island	96																						
Badu Island	Yam Island	72																						
Mabuiag Island	Murray Island	205																						
Brisbane	Goondiwindi	303																						
Bamaga	Cooktown	580																						
Coconut Island	Kubin Village	88																						
Coconut Island	Saibai Island	90																						
Barcaldine	Townsville	502																						
Barcaldine	Winton	264																						
Kubin Village	Weipa	275																						
Mornington Island	Townsville	854																						
Mabuiag Island	Yorke Island	137																						
Kubin Village	Yam Island	63																						
Aurukun	Edward River	171																						
Aurukun	Weipa	78																						
Aurukun	Kowanyama	236																						
Bamaga	Yorke Island	171																						

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Boigu Island	Sue Island	124																						
Darnley Island	Kubin Village	176																						
Darnley Island	Saibai Island	128																						
Mabuiag Island	Sue Island	79																						
Murray Island	Saibai Island	168																						
Coen	Weipa	176																						
Charters Towers	Richmond	338																						
Kowanyama	Weipa	312																						
Burketown	Cairns	668																						
Charters Towers	Winton	420																						
Bamaga	Murray Island	209																						
Bamaga	Saibai Island	175																						
Bamaga	Sue Island	92																						
Bamaga	Yam Island	121																						
Badu Island	Weipa	286																						
Edward River	Karumba	296																						
Coconut Island	Mabuiag Island	99																						
Kubin Village	Yorke Island	134																						
Kubin Village	Murray Island	195																						
Cooktown	Thursday Island	624																						
Boigu Island	Coconut Island	128																						
Boigu Island	Yorke Island	141																						
Yorke Island	Saibai Island	96																						
Bamaga	Darnley Island	209																						
Badu Island	Murray Island	210																						
Boigu Island	Murray Island	213																						
Boigu Island	Yam Island	91																						
Cairns	Charters Towers	355																						
Darnley Island	Mabuiag Island	178																						
Karumba	Weipa	543																						
Kowanyama	Thursday Island	547																						
Longreach	Windorah	274																						
Roma	Windorah	624																						
Thursday Island	Turtle Head Island	58																						
Maroochydore	Noosa	24																						
Brisbane	Noosa	111																						
Cooktown	Coen	291																						
Cooktown	Iron Range	358																						
Iron Range	Yorke Island	339																						
Mackay	Shute Harbour	109																						
Shute Harbour	Townsville	237																						
Aurukun	Iron Range	182																						
Richmond	Winton	185																						
Bamaga	Aurukun	279																						
Bamaga	Boigu Island	187																						
Aurukun	Karumba	465																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued)

Airport 1	Airport 2	Distance	Route density																				
			1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Aurukun	Thursday Island	313																					
Barcaldine	Richmond	390																					
Blackall	Townsville	591																					
Cloncurry	Charters Towers	607																					
Cairns	Kubin Village	828																					
Cairns	Sue Island	804																					
Coen	Kowanyama	241																					
Dauan Island	Thursday Island	133																					
Iron Range	Kowanyama	343																					
Middlemount	Rockhampton	192																					
Arrabury	Durham Downs	94																					
Dysart	Middlemount	40																					
Dysart	Moranbah	68																					
Maryborough	Noosa	105																					
Middlemount	Moranbah	104																					
Bedourie	Kamaran Downs	21																					
Dysart	Rockhampton	232																					
Moranbah	Rockhampton	286																					
Hervey Bay	Noosa	121																					
Clermont	Emerald	106																					
Brisbane	Middlemount	676																					
Bamaga	Heathlands	89																					
Boigu Island	Darnley Island	173																					
Brisbane	Dysart	714																					
Cairns	Heathlands	664																					
Heathlands	Iron Range	139																					
Iron Range	Lizard Island	315																					
Maryborough	Townsville	926																					
Blackwater	Maryborough	448																					
Bundaberg	Noosa	183																					
Clermont	Rockhampton	300																					
Noosa	Toowoomba	176																					
Bundaberg	Toowoomba	297																					
Blackwater	Mackay	272																					
Dysart	Hervey Bay	549																					
Dysart	Mackay	181																					
Dysart	Townsville	409																					
Gladstone	Toowoomba	415																					

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Hervey Bay	Mackay	596																						
Hervey Bay	Oakey	259																						
Maroochydore	Oakey	161																						
Brisbane	Caloundra	65																						
Caloundra	Maroochydore	22																						
Cooktown	Lizard Island	91																						
Clermont	Middlemount	112																						
Clermont	Moranbah	92																						
Brisbane	Gympie	129																						
Brisbane	Orchid Beach	270																						
Gympie	Hervey Bay	108																						
Gympie	Maryborough	85																						
Hervey Bay	Orchid Beach	58																						
Maryborough	Orchid Beach	85																						
Maroochydore	Orchid Beach	184																						
Maroochydore	Toowoomba	157																						
Iron Range	Weipa	150																						
Brisbane	Clermont	755																						
Brisbane	Kingaroy	155																						
Gayndah	Kingaroy	110																						
Brisbane	Gayndah	247																						
Dysart	Emerald	107																						
Bundaberg	Gold Coast	381																						
Clermont	Thangool	358																						
Caloundra	Hervey Bay	166																						
Kingaroy	Gold Coast	241																						
Kingaroy	Toowoomba	108																						
Gold Coast	Toowoomba	171																						
Edward River	Weipa	248																						
Mackay	Moranbah	151																						
Emerald	Middlemount	101																						
Blackwater	Middlemount	89																						
Julia Creek	Winton	235																						
Kowanyama	Mornington Island	306																						
Collinsville	Mackay	152																						
Collinsville	Townsville	188																						
Clermont	Maroochydore	698																						
Mount Isa	Proserpine	945																						
Alpha	Barcaldine	131																						
Alpha	Emerald	162																						
Alpha	Longreach	238																						
Barcaldine	Clermont	252																						
Brisbane	Dalby	185																						
Croydon	Cairns	400																						
Croydon	Georgetown	135																						
Croydon	Normanton	139																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Queensland (continued) *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Clermont	Dysart	79																						
Clermont	Longreach	350																						
Cairns	Georgetown	284																						
Dalby	Roma	257																						
Dalby	Toowoomba	78																						
Delta Downs	Normanton	81																						
Dunbar	Koolatah	16																						
Dunbar	Normanton	230																						
Gayndah	Monto	96																						
Goondiwindi	Saint George	177																						
Goondiwindi	Toowoomba	190																						
Georgetown	Robin Hood	63																						
Inkerman	Normanton	161																						
Inkerman	Rutland Plains	83																						
Koolatah	Kowanyama	88																						
Kowanyama	Rutland Plains	19																						
Miranda Downs	Normanton	98																						
Miranda Downs	Vanrook	40																						
Alpha	Middlemount	236																						
Barcaldine	Rockhampton	528																						
Birdsville	Kamaran Downs	174																						
Coen	Edward River	205																						
Delta Downs	Dorunda	71																						
Dunbar	Dorunda	85																						
Dorunda	Normanton	148																						
Dorunda	Vanrook	48																						
Gayndah	Thangool	163																						
Kingaroy	Monto	202																						
Maryborough	Toowoomba	240																						
Monto	Thangool	69																						
Hayman Island	Proserpine	61																						
Hayman Island	Hamilton Island	35																						
Hayman Island	Shute Harbour	29																						
Hayman Island	South Molle Island	25																						
Proserpine	South Molle Island	39																						
Alpha	Brisbane	775																						
Aramac	Longreach	112																						
Aramac	Muttaburra	84																						

(continued)

Queensland (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Aramac	Winton	232																						
Blackall	Isisford	103																						
Blackwater	Moranbah	186																						
Brisbane	Monto	342																						
Cloncurry	Winton	327																						
Charleville	Mitchell	168																						
Dalby	Goondiwindi	178																						
Daydream Island	Hayman Island	25																						
Daydream Island	Hamilton Island	18																						
Daydream Island	Proserpine	38																						
Daydream Island	Shute Harbour	7																						
Daydream Island	South Molle Island	2																						
Delta Downs	Miranda Downs	74																						
Delta Downs	Vanrook	67																						
Durham Downs	Glengyle	341																						
Dysart	Gladstone	324																						
Dysart	Thangool	308																						
Emerald	Moranbah	167																						
Gladstone	Middlemount	283																						
Gladstone	Moranbah	379																						
Happy Bay	Hayman Island	32																						
Happy Bay	Hamilton Island	11																						
Happy Bay	Mackay	99																						
Happy Bay	Proserpine	36																						
Happy Bay	South Molle Island	7																						
Hayman Island	Mackay	128																						
Hamilton Island	Shute Harbour	23																						
Hamilton Island	South Molle Island	16																						
Inkerman	Kowanyama	93																						
Isisford	Longreach	92																						
Koolatah	Normanton	245																						
Kowanyama	Normanton	254																						
Mackay	South Molle Island	106																						
Middlemount	Thangool	268																						
Miners Lake	Townsville	183																						
Mitchell	Roma	83																						
Noosa	Rockhampton	427																						
Normanton	Rutland Plains	242																						
Normanton	Vanrook	123																						
Proserpine	Shute Harbour	32																						
Shute Harbour	South Molle Island	9																						
Thangool	Townsville	703																						
Muttaburra	Winton	151																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

South Australia — *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Adelaide	Port Lincoln	246																						
Adelaide	Kingscote	125																						
Adelaide	Whyalla	230																						
Adelaide	Mount Gambier	371																						
Adelaide	Olympic Dam	520																						
Adelaide	Ceduna	546																						
Adelaide	Coober Pedy	748																						
Adelaide	Port Augusta	281																						
Coober Pedy	Olympic Dam	263																						
Olympic Dam	Whyalla	293																						
Leigh Creek	Port Augusta	223																						
Coober Pedy	Whyalla	520																						
Etadunna	Mulka	41																						
Leigh Creek	Moolawatana	148																						
Mulka	Mungaranie	37																						
Dulkaninna	Etadunna	37																						
Dulkaninna	Leigh Creek	176																						
Clifton Hills	Cowarie	94																						
Cowarie	Mungaranie	48																						
Innamincka	Leigh Creek	393																						
Innamincka	Nappa Merrie	43																						
Ceduna	Port Lincoln	341																						
Etadunna	Leigh Creek	210																						
Etadunna	Mungaranie	78																						
Innamincka	Moolawatana	264																						
Ceduna	Coober Pedy	357																						
Innamincka	Merty Merty	106																						
Merty Merty	Moolawatana	158																						
Clifton Hills	Mungaranie	113																						
Clifton Hills	Pandie Pandie	112																						
Leigh Creek	Merty Merty	289																						
Moomba	Merty Merty	55																						
Moomba	Nappa Merrie	110																						
Ceduna	Whyalla	372																						
Dulkaninna	Port Augusta	395																						
Innamincka	Moomba	69																						
Leigh Creek	Moomba	326																						
Moomba	Moolawatana	206																						

(continued)

South Australia (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Merty Merty	Nappa Merrie	139																						
Moolawatana	Nappa Merrie	295																						
Nappa Merrie	Cordillo Downs	102																						
Adelaide	Wudinna	355																						
Cowarie	Mulka	79																						
Dulkaninna	Mungaranie	113																						
Adelaide	Cleve	232																						
Cleve	Wudinna	123																						
Port Lincoln	Whyalla	229																						
Kingscote	Port Lincoln	194																						
Adelaide	Leigh Creek	483																						
Adelaide	Renmark	214																						
Port Augusta	Woomera	174																						
Adelaide	Tumby Bay	233																						
Streaky Bay	Wudinna	111																						
Ceduna	Streaky Bay	95																						
Port Lincoln	Wudinna	178																						
Adelaide	Woomera	452																						
Olympic Dam	Woomera	73																						
Coober Pedy	Woomera	309																						
Adelaide	Penneshaw	105																						
Kingscote	Penneshaw	37																						
Cummins	Tumby Bay	72																						
Adelaide	American River	116																						
American River	Kingscote	23																						
Adelaide	Cummins	305																						
American River	Parndana	44																						
Kingscote	Parndana	24																						
Woomera	Whyalla	223																						
Adelaide	Minlaton	93																						
Minlaton	Tumby Bay	140																						
American River	Penneshaw	16																						
Adelaide	Parndana	148																						
Parndana	Penneshaw	60																						
Port Augusta	Whyalla	64																						
Adelaide	Streaky Bay	457																						
Kingscote	Mount Gambier	369																						
Kingscote	Whyalla	295																						
Alton Downs	Clifton Hills	100																						
Alton Downs	Pandie Pandie	47																						
Streaky Bay	Port Lincoln	246																						
Adelaide	Port Pirie	196																						
Ceduna	Kingscote	532																						
Coober Pedy	Port Lincoln	628																						
Port Pirie	Whyalla	49																						
Lambina	Todmordon	73																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

South Australia (continued) — *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Ceduna	Port Pirie	420																						
Cleve	Kimba	69																						
Kimba	Wudinna	95																						
Olympic Dam	Port Lincoln	467																						
Cummins	Port Lincoln	72																						
Adelaide	Cowell	207																						
Ceduna	Port Augusta	379																						
Innamincka	Cordillo Downs	106																						
Adelaide	Naracoorte	301																						
Mount Gambier	Naracoorte	85																						
Mount Gambier	Millicent	41																						
Millicent	Naracoorte	74																						
Adelaide	Marla	966																						
Adelaide	Millicent	337																						
Amata	Fregon	110																						
Coober Pedy	Marla	218																						
Etadunna	Moolawatana	172																						
Ernabella	Fregon	59																						
Leigh Creek	Marree	110																						
Marree	Merty Merty	249																						
Marla	Olympic Dam	472																						
Alton Downs	Etadunna	290																						
Alton Downs	Leigh Creek	501																						
Alton Downs	Port Augusta	720																						
Amata	Ernabella	98																						
Coober Pedy	Port Pirie	561																						
Coober Pedy	Port Augusta	480																						
Cowarie	Leigh Creek	322																						
Marla	Woomera	525																						
Mungaranie	Cordillo Downs	241																						
Olympic Dam	Port Augusta	239																						
Tasmania																								
Flinders Island	Launceston	174																						
King Island	Burnie	201																						
Devonport	Burnie	62																						
Hobart	Burnie	252																						

(continued)

Tasmania (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Hobart	Launceston	146																						
Cape Barren Island	Launceston	144																						
Cambridge	Strahan	194																						
Devonport	King Island	260																						
Devonport	Launceston	78																						
Launceston	Burnie	138																						
King Island	Launceston	337																						
Devonport	Hobart	206																						
Flinders Island	King Island	352																						
Strahan	Queenstown	22																						
Hobart	Strahan	198																						
Hobart	King Island	448																						
Cape Barren Island	Flinders Island	34																						
Launceston	Strahan	174																						
Flinders Island	Burnie	216																						
Hobart	Queenstown	184																						
Flinders Island	Hobart	308																						
Queenstown	Burnie	121																						
Flinders Island	George Town	144																						
Smithton	Strahan	148																						
Smithton	Queenstown	143																						
Launceston	Queenstown	152																						
Strahan	Burnie	134																						
Cambridge	Launceston	144																						
Devonport	Queenstown	126																						
Cambridge	Flinders Island	308																						
Devonport	Strahan	145																						
Flinders Island	Saint Helens	141																						
Hobart	Smithton	300																						
Devonport	Flinders Island	179																						
King Island	Strahan	280																						
Smithton	Burnie	57																						
Launceston	Smithton	195																						
Flinders Island	Smithton	260																						
King Island	Smithton	148																						
Devonport	Smithton	119																						
Flinders Island	Strahan	323																						
Flinders Island	Queenstown	302																						

Victoria

Melbourne	Mildura	457																						
Melbourne	Portland	305																						
Essendon	Warrnambool	225																						
Melbourne	Mount Hotham	231																						
Avalon	Portland	265																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Victoria (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																				
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Avalon	Essendon	51																						
Hamilton	Warrnambool	79																						
Hamilton	Portland	91																						
Hamilton	Essendon	250																						
Latrobe Valley	Essendon	148																						
Latrobe Valley	Melbourne	155																						
Essendon	Portland	308																						
Shepparton	Wangaratta	82																						
Melbourne	Swan Hill	281																						
Latrobe Valley	Sale	45																						
Echuca	Essendon	175																						
Essendon	Swan Hill	289																						
Echuca	Swan Hill	141																						
Phillip Island	Tyabb	35																						
Mildura	Swan Hill	184																						
Melbourne	Shepparton	147																						
Hamilton	Melbourne	245																						
Melbourne	Warrnambool	222																						
Essendon	Sale	186																						
Melbourne	Sale	192																						
Echuca	Melbourne	168																						
Mildura	Ouyen	100																						
Ouyen	Swan Hill	110																						
Essendon	Mildura	465																						
Hamilton	Horsham	109																						
Horsham	Warrnambool	182																						
Horsham	Essendon	269																						
Horsham	Mildura	271																						
Moorabbin	Mildura	497																						
Moorabbin	Swan Hill	321																						
Essendon	Wangaratta	192																						
Essendon	Warracknabeal	271																						
Mildura	Warracknabeal	235																						
Portland	Warrnambool	85																						

(continued)

Western Australia (continued)

Airport 1	Airport 2	Distance	Route density: 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Karratha	Perth	1250																						
Kalgoorlie	Perth	538																						
Broome	Perth	1677																						
Perth	Port Hedland	1312																						
Geraldton	Perth	370																						
Paraburdoo	Perth	990																						
Perth	Newman	1019																						
Esperance	Perth	582																						
Albany	Perth	375																						
Broome	Kununurra	731																						
Carnarvon	Perth	816																						
Learmonth	Perth	1094																						
Karratha	Port Hedland	197																						
Kununurra	Perth	2211																						
Carnarvon	Geraldton	447																						
Christmas Island	Perth	2610																						
Cocos Island	Christmas Island	986																						
Perth	Ravensthorpe	413																						
Paraburdoo	Newman	212																						
Leonora	Perth	616																						
Leinster	Perth	645																						
Broome	Derby-Curtin	174																						
Geraldton	Learmonth	731																						
Carnarvon	Learmonth	297																						
Laverton	Perth	723																						
Meekatharra	Perth	643																						
Cocos Island	Perth	2941																						
Leinster	Leonora	130																						
Mount Magnet	Perth	462																						
Fitzroy Crossing	Halls Creek	223																						
Broome	Fitzroy Crossing	353																						
Perth	Wiluna	720																						
Meekatharra	Wiluna	167																						
Kununurra	Newman	1261																						
Broome	Learmonth	976																						
Broome	Karratha	651																						
Kalbarri	Perth	495																						
Monkey Mia	Perth	713																						
Geraldton	Monkey Mia	343																						
Kalbarri	Monkey Mia	218																						
Broome	Port Hedland	466																						
Halls Creek	Newman	1000																						
Esperance	Kalgoorlie	324																						
Albany	Esperance	395																						
Broome	Newman	658																						
Karratha	Newman	434																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Western Australia (continued)

Airport 1	*Airport 2*	*Distance*	*Route density*																					
			1984	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Paraburdoo	Port Hedland	323																						
Kununurra	Leinster	1574																						
Karratha	Learmonth	326																						
Karratha	Paraburdoo	291																						
Port Hedland	Newman	359																						
Learmonth	Port Hedland	514																						
Kununurra	Paraburdoo	1413																						
Kalgoorlie	Leinster	336																						
Argyle	Kununurra	99																						
Busselton	Perth	202																						
Leinster	Mount Keith	64																						
Broome	Leinster	1110																						
Argyle	Perth	2117																						
Perth	Shark Bay	711																						
Leonora	Laverton	112																						
Carnarvon	Shark Bay	113																						
Learmonth	Shark Bay	410																						
Kalgoorlie	Leonora	213																						
Geraldton	Shark Bay	341																						
Kalgoorlie	Laverton	259																						
Geraldton	Kalbarri	126																						
Argyle	Newman	1177																						
Broome	Argyle	677																						
Derby-Curtin	Argyle	503																						
Busselton	Geraldton	546																						
Geraldton	Kalgoorlie	690																						
Derby-Curtin	Perth	1781																						
Leinster	Laverton	189																						
Broome	Paraburdoo	745																						
Carnarvon	Monkey Mia	112																						
Learmonth	Monkey Mia	408																						
Derby-Curtin	Kununurra	558																						
Geraldton	Karratha	922																						
Carnarvon	Karratha	562																						
Plutonic Mine	Perth	808																						
Perth	Mount Keith	682																						
Kununurra	Karratha	1375																						
Margaret River	Perth	236																						

(continued)

Western Australia (continued)

Airport 1	*Airport 2*	*Distance*	*Route density* 1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Kalbarri	Useless Loop	195																						
Shark Bay	Useless Loop	34																						
Halls Creek	Kununurra	294																						
Busselton	Margaret River	35																						
Kununurra	Port Hedland	1183																						
Laverton	Mount Keith	236																						
Leonora	Mount Keith	192																						
Leinster	Wiluna	143																						
Christmas Island	Port Hedland	1771																						
Kalgoorlie	Mount Keith	399																						
Geraldton	Leonora	645																						
Kalgoorlie	Port Hedland	1191																						
Broome	Kalgoorlie	1429																						
Broome	Meekatharra	1034																						
Geraldton	Newman	785																						
Geraldton	Argyle	1951																						
Derby-Curtin	Fitzroy Crossing	195																						
Kununurra	Wyndham	67																						
Kalumburu	Wyndham	213																						
Drysdale	Kalumburu	159																						
Drysdale	Wyndham	193																						
Balgo Hills Mission	Halls Creek	216																						
Derby-Curtin	Halls Creek	413																						
Fitzroy Crossing	Kununurra	428																						
Mount Keith	Wiluna	80																						
Halls Creek	Margaret River Station	94																						
Fitzroy Crossing	Margaret River Station	148																						
Derby-Curtin	Port Hedland	630																						
Kalgoorlie	Karratha	1214																						
Perth	Rottnest Island	41																						
Cue	Perth	534																						
Marble Bar	Port Hedland	153																						
Cue	Mount Magnet	75																						
Marble Bar	Newman	251																						
Leonora	Meekatharra	371																						
Argyle	Port Hedland	1117																						
Meekatharra	Newman	377																						
Christmas Island	Learmonth	1585																						
Cocos Island	Learmonth	2145																						
Meekatharra	Mount Magnet	181																						
Marble Bar	Woodie Woodie	154																						
Meekatharra	Mount Keith	213																						
Camp Nifty	Telfer	67																						
Camp Nifty	Woodie Woodie	37																						
Christmas Island	Geraldton	2244																						
Laverton	Wiluna	309																						

(continued)

Table B3 Route density, by intrastate regional air route, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

Air routes with no passenger movements recorded	Air routes with between 10 000 to 49 999 passengers a year
Air routes with fewer than 999 passengers a year	Air routes with between 50 000 to 99 999 passengers a year
Air routes with between 1000 to 4999 passengers a year	Air routes with between 100 000 to 499 999 passengers a year
Air routes with between 5000 to 9999 passengers a year	Air routes with more than 500 000 a year

Western Australia (continued) *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Leonora	Wiluna	272																						
Cue	Meekatharra	112																						
Leinster	Meekatharra	254																						
Telfer	Woodie Woodie	104																						
Geraldton	Port Hedland	1016																						
Kununurra	Meekatharra	1598																						
Meekatharra	Paraburdoo	391																						
Meekatharra	Shark Bay	503																						
Laverton	Meekatharra	443																						
Karratha	Meekatharra	680																						
Albany	Geraldton	744																						
Cocos Island	Geraldton	2615																						
Perth	Telfer	1295																						
Derby-Curtin	Karratha	819																						
Cue	Geraldton	349																						
Geraldton	Meekatharra	450																						
Kalgoorlie	Meekatharra	545																						
Bunbury	Perth	162																						
Cocos Island	Port Hedland	2497																						
Derby-Curtin	Newman	772																						
Broome	Geraldton	1429																						
Derby-Curtin	Meekatharra	1141																						
Mount Magnet	Wiluna	287																						
Broome	Christmas Island	1968																						
Billiluna	Halls Creek	148																						
Kalgoorlie	Kununurra	1823																						
Theeda	Kalumburu	59																						
Carnarvon	Paraburdoo	456																						
Halls Creek	Ord River	165																						
Kununurra	Ord River	175																						
Theeda	Wyndham	173																						
Derby-Curtin	Paraburdoo	888																						
Carnarvon	Derby-Curtin	1329																						
Meekatharra	Port Hedland	692																						
Argyle	Karratha	1312																						
Learmonth	Paraburdoo	390																						
Geraldton	Paraburdoo	695																						
Geraldton	Mount Magnet	316																						

(continued)

Western Australia (continued)

Route density

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Geraldton	Kununurra	2039																						
Carnarvon	Port Hedland	714																						
Billiluna	Kununurra	435																						
King Edward River Stn	Kalumburu	126																						
King Edward River Stn	Wyndham	197																						
Flora Valley	Halls Creek	80																						
Flora Valley	Kununurra	280																						
Broome	Carnarvon	1174																						
Geraldton	Leinster	597																						
Ellenbrae	Mitchell Plateau	186																						
Marble Bar	Nullagine	92																						
Marble Bar	Telfer	256																						
Mitchell Plateau	Kalumburu	103																						
Nullagine	Port Hedland	236																						
Port Hedland	Telfer	403																						
Ellenbrae	Wyndham	128																						
Karratha	Onslow	202																						
Kununurra	Margaret River Station	371																						
Nullagine	Telfer	211																						
Onslow	Port Hedland	392																						
Balgo Hills Mission	Kununurra	492																						
Billiluna	Balgo Hills Mission	74																						
Drysdale	Theeda	105																						
Kalgoorlie	Norseman	160																						
Esperance	Norseman	164																						
Kalgoorlie	Wiluna	477																						
Derby-Curtin	Margaret River Station	343																						
Derby-Curtin	Geraldton	1555																						
Leonora	Mount Magnet	350																						
Kalgoorlie	Porphyry	137																						
Laverton	Porphyry	130																						
Geraldton	Wiluna	594																						
Perth	Southern Cross	331																						
Geraldton	Useless Loop	321																						
Kalgoorlie	Learmonth	1201																						
Karratha	Telfer	577																						
Meekatharra	Telfer	660																						
Kalgoorlie	Paraburdoo	923																						
Derby-Curtin	Kalgoorlie	1486																						
Telfer	Wiluna	583																						
Fremantle	Rottnest Island	21																						
Kalgoorlie	Southern Cross	207																						
Kalbarri	Shark Bay	216																						
Margaret River Station	Mitchell Plateau	441																						
Margaret River Station	Wyndham	371																						
Ellenbrae	Halls Creek	260																						

(continued)

Table B3 Route density by intrastate regional air routes, 1984 to 2005 (continued)

Data was chronological sorted from 1984 to 2005 based on total number of air routes served by each airline

	Air routes with no passenger movements recorded		Air routes with between 10 000 to 49 999 passengers a year
	Air routes with fewer than 999 passengers a year		Air routes with between 50 000 to 99 999 passengers a year
	Air routes with between 1000 to 4999 passengers a year		Air routes with between 100 000 to 499 999 passengers a year
	Air routes with between 5000 to 9999 passengers a year		Air routes with more than 500 000 a year

Western Australia (continued) *Route density*

Airport 1	*Airport 2*	*Distance*	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Esperance	Leonora	536																						
Halls Creek	Wyndham	307																						
Giles	Kiwirrkurra	253																						
Esperance	Laverton	566																						
Mount Magnet	Telfer	838																						
Leonora	Porphyry	136																						
Nullagine	Newman	172																						
Paraburdoo	Wittenoom	122																						
Ellenbrae	Kalumburu	192																						
Derby-Curtin	Learmonth	1143																						
Geraldton	Morawa	136																						
Geraldton	Mullewa	87																						
Kambalda	Kalgoorlie	46																						
Kambalda	Norseman	115																						
Learmonth	Newman	601																						
Mount Magnet	Yeelirrie	240																						
Morawa	Perth	304																						
Mullewa	Perth	387																						
Norseman	Perth	547																						
Onslow	Paraburdoo	318																						
Wiluna	Yeelirrie	73																						

Source: BITRE time series estimates.

Appendix C

Access to regional air services

bitre

Appendix C Access to regional air services

Table C1 Urban centres and localities located beyond the assumed access distance of 40 km or 120 km

UC/L Name	*Population 2001*	*UC/L Name*	*Population 2001*
Allanson (L)	574	Camperdown	3 130
Allora (L)	915	Capel	1 418
Alpha (L)	367	Carnamah (L)	359
Alpurrurulam (L)	356	Cecil Plains (L)	281
Ampilatwatja (Aherrenge) (L)	302	Cervantes (L)	622
Apollo Bay-Marengo	1 380	Charlton	1 026
Aramac (L)	323	Chinchilla	3 376
Ararat	7 052	Clare	2 930
Arcadia Downs (L)	288	Clifton (L)	887
Ashford (L)	476	Cobden	1 420
Augathella (L)	421	Cobdogla (L)	273
Augusta	1 128	Cobram	4 554
Avoca (L)	957	Cohuna	1956
Bairnsdale	10 667	Colac	10 182
Balgo (L)	449	Collarenebri (L)	505
Balranald	1 282	Collie	6 955
Bamyili (Barunga) (L)	346	Condobolin	3 054
Baradine (L)	699	Cooinda (L)	441
Bardi (One Arm Point)	310	Coonalpyn (L)	213
Barham-Koondrook (Barham Part)	1 186	Coral Bay	1 095
Barham-Koondrook (Koondrook Part)	666	Corrigin (L)	725
Barmera	1 946	Cowaramup (L)	372
Beaufort (L)	987	Croydon (L)	224
Beeac (L)	209	Cuballing(L)	238
Bell (L)	268	Cue (L)	290
Berri	4 241	Cunderdin (L)	716
Beswick (L)	357	Dalby	9 731
Beulah (L)	203	Dalwallinu (L)	694
Bingara	1 227	Daly River (L)	621
Binningup (L)	749	Dardanup (L)	355
Birchip (L)	698	Darkan (L)	202
Birregurra (L)	426	Darnley Island (L)	313
Blanchetown (L)	211	Deepwater (L)	269
Blyth (L)	284	Delungra (L)	269

(continued)

Table C1 Urban centres and localities located beyond the assumed access distance of 40 km or 120 km (continued)

UC/L Name	Population 2001	UC/L Name	Population 2001
Boggabilla (L)	667	Deniliquin	7 786
Boort (L)	756	Derrinallum (L)	261
Bordertown	2 455	Dimboola	1 496
Borroloola (L)	769	Dirranbandi (L)	526
Boyanup (L)	619	Donald	1 327
Boyup Brook (L)	548	Donnybrook	1 616
Bremer Bay (L)	241	Dookie (L)	251
Brewarrina	1 201	Dowerin (L)	358
Briagolong (L)	542	Duck Creek (L)	230
Bridgetown	2094	Dumbleyung (L)	269
Bridgewater (L)	403	Dunolly (L)	663
Bruce Rock (L)	526	Dunsborough	1 634
Brunswick Junction (L)	836	Eagle Point (L)	394
Bruthen (L)	526	Echuca-Moama (Echuca Part)	10 955
Bunbury	45 299	Echuca-Moama (Moama Part)	2 823
Burekup (L)	282	Eidsvold (L)	495
Burra	1 106	Elliott (L)	419
Busselton	13 963	Elliston (L)	234
Cadell (L)	459	Elmore (L)	665
Camooweal (L)	243	Emmaville (L)	308
Eneabba (L)	263	Lakes Entrance	5 503
Ernabella (L)	446	Lameroo (L)	489
Euroa	2 710	Leeman (L)	539
Finley	1 912	Leitchville (L)	297
Foster (L)	988	Lindenow (L)	303
Fregon (L)	252	Lismore (L)	267
George Town (L)	318	Loch Sport (L)	949
Girgarre (L)	214	Lockington (L)	400
Gnarabup (L)	601	Looma (L)	287
Goodooga (L)	300	Loxton	3 358
Goondiwindi	5 491	Maffra	3 916
Goornong (L)	261	Manangatang (L)	251
Goroke (L)	263	Manjimup	4 402
Green Head (L)	244	Mansfield	2 667
Greenbushes (L)	380	Marble Bar (L)	241
Greenmount (L)	271	Margaret River	3 717
Gulin Gulin-Weemol (L)	245	Marlo (L)	353
Gunbower (L)	283	Marong (L)	269
Halls Gap (L)	478	Marpuna (L)	215
Harvey	2 551	Marvel Loch (L)	250
Hawker (L)	298	Mataranka (L)	499
Hay	2 703	Mathoura (L)	645

(continued)

(continued)

UC/L Name	*Population 2001*	*UC/L Name*	*Population 2001*
Hopetoun (L)	625	Menindee (L)	392
Hopetoun (L)	365	Merredin	2 807
Horsham	13 241	Merrigum (L)	468
Huntly (L)	876	Merriwa (L)	987
Indulkana (L)	220	Metung (L)	516
Inglewood (L)	685	Miles	1 196
Inglewood (L)	867	Millmerran	1 250
Injune (L)	391	Mimili (L)	264
Ivanhoe (L)	273	Mindibungu (L)	213
Jabiru	1 775	Minjilang (L)	204
Jandowae (L)	752	Mintabie (L)	208
Jeparit (L)	371	Minyip (L)	436
Jerramungup (L)	273	Mitchell	1 011
Jurien	1 153	Moora	1 730
Kaltukatjara (Docker River) (L)	297	Moorook (L)	209
Kalumburu (L)	339	Morawa (L)	629
Kaniva (L)	731	Morgan (L)	424
Karoonda (L)	310	Mortlake (L)	941
Katanning	3 685	Moulamein (L)	423
Keith	1 128	Moura	1 802
Kellerberrin (L)	820	Mukinbudin (L)	318
Kerang	3 719	Mundubbera	1 247
Kingaroy	7 193	Mungindi (Part) (L)	645
Kingston S.E.	1 486	Murchison (L)	672
Kintore (L)	682	Murray Island (L)	426
Kojonup	1 131	Murrayville (L)	233
Kondinin (L)	295	Murtoa (L)	773
Koorda (L)	259	Nannup (L)	531
Kulin (L)	288	Narembeen (L)	390
Kyabram	5 534	Narrogin	4 435
Lake Boga (L)	679	Nathalia	1 416
Lake Grace (L)	531	Natimuk (L)	418
Lake Tyers Beach (L)	517	Newlands Arm (L)	397
Ngukurr (L)	933	Talbot Islands (L)	270
Nhill	1 980	Tallygaroopna (L)	303
Noorat (L)	268	Tambo (L)	359
Norseman	1 061	Tara (L)	846
Numurkah	3 382	Taroom (L)	689
Nyah (L)	315	Tatura	2 931
Nyah West (L)	541	Tenterfield	3 191
Nyngan	2 068	Terang	1 862
Nyrripi (L)	245	Texas (L)	701
Oenpelli (L)	858	Theodore (L)	450
Onslow (L)	795	Thredbo Village	2 934

(continued)

Table C1 Urban centres and localities located beyond the assumed access distance of 40 km or 120 km (continued)

UC/L Name	Population 2001	UC/L Name	Population 2001
Orbost	2 097	Three Springs (L)	473
Palumpa (L)	389	Timber Creek (L)	300
Papunya (L)	261	Timboon (L)	792
Paringa (L)	812	Tintinara (L)	271
Paynesville	2 861	Tocumwal	1 529
Pemberton (L)	948	Tongala	1 179
Peppermint Grove (L)	350	Tooleybuc (L)	238
Peppimenarti (L)	210	Toora (L)	490
Perisher Village	1 811	Umbakumba (L)	372
Peterborough	1 683	Violet Town (L)	593
Pine Creek (L)	472	Wagin	1 282
Pingelly (L)	729	Waikerie	1 770
Pinnaroo (L)	597	Wakool (L)	225
Port Albert (L)	224	Wallangarra (L)	399
Port Campbell (L)	459	Wallumbilla (L)	228
Port Keats	1 048	Wandoan (L)	396
Port Welshpool (L)	216	Warburton (L)	471
Proston (L)	286	Warialda	1 201
Pyramid Hill (L)	498	Warmun (L)	319
Quairading (L)	589	Warrabri (L)	487
Quambatook (L)	242	Warracknabeal	2 490
Quindalup (L)	496	Warruwi (L)	331
Rainbow (L)	529	Warwick	12 011
Renmark	4 470	Wedderburn (L)	656
Rochester	2 624	Wee Waa	1 816
Rupanyup (L)	399	White Cliffs (L)	225
Rushworth	1 001	Wickepin (L)	216
Saibai Island (L)	319	Wilcannia (L)	698
Sale	12 854	Willaura (L)	288
Sea Lake (L)	638	Williams (L)	329
Seaspray (L)	208	Willowra (L)	347
Shepparton-Mooroopna	35 828	Wondai	1 266
Skipton (L)	454	Wongan Hills (L)	783
Southern Cross (L)	897	Woomelang (L)	211
St Arnaud	2 400	Woomera (L)	602
Stanhope (L)	514	Woorabinda (L)	961
Stanthorpe	4 193	Woorinen (L)	323
Stawell	6 142	Wudinna (L)	535
Stratford	1 330	Wunghnu (L)	238
Stratham (L)	747	Wyalkatchem (L)	369
Strathmerton (L)	455	Wycheproof (L)	695
Streaky Bay	1 081	Yalata (L)	223
Surat (L)	444	Yangan (L)	209

(continued)

(continued)

UC/L Name	*Population 2001*	*UC/L Name*	*Population 2001*
Swan Hill	9 771	Yarram	1 789
Yelarbon (L)	220		
Young	6 835		
Yuleba (L)	207		
Yungngora (L)	256		

Sources: ABS 2001b and BITRE time series estimates.

Appendix D

Forecasting process details in the SAS forecasting system

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Appendix D Forecasting process details in the SAS forecasting system

Section 1: Extrapolative projection with SAS

(Yaffee, 1996)

Extrapolative methods consist of a variety of exponential smoothing techniques. First, there is simple exponential smoothing, with or without a constant (a baseline level for the series). Second, there is Holt exponential smoothing with a trend (a deterministic tendency over time) for long-term patterns. Third, there is Winters exponential smoothing, which involves a linear or quadratic trend with a multiplicative or additive seasonal (regular variation around the trend) component. There is also stepwise autoregressive exponential smoothing for more short-run fluctuations.

Exponential smoothing is based on the concept of moving averages. If a mean of the first twelve data points (of, say, fifty) is computed and recorded, and is moved one time period ahead from the previous starting position to compute the average for points two through thirteen, and then this process is reiterated until the end of the series is reached. The new data series recorded is called a moving average of order twelve. The moving average smooths out irregular fluctuation, and a double moving average—a moving average of a moving average—smooths it out even more.

Exponential smoothing represents an improvement on moving average smoothing. Simple moving averages give more weights to mid-range data values, whereas exponential smoothing has the decided advantage of giving more weight to recent observations and exponentially smaller weight to historically distant observations. A simple exponential forecast for one time period in the future is the forecast of the current value plus the average error. The average error of the series at the present time is the quantity of the value of the series at the present time, divided by the total number of values, minus the quantity of the forecast of the current value, divided by the total number of values.

Coupled with this moving average concept, the Holt model accommodates a constant, linear trend for long-run forecasts, or a quadratic trend (for projections of a recent change in the series). The Winters model accommodates seasonal fluctuations in the series as well. SAS allows for a multiplicative as well as an additive Winters model and also permits custom-designed smoothing and forecasting.

The relative fit of these models is generally assessed by the sum of squared errors. SAS produces a wide variety of measures of fit (see section 3). The model with the best fit is the chosen model. It can handle additive as well as multiplicative seasonal models. It also has a quadratic trend option which provides for fixing selected parameters. It is possible to have a custom design models. Stepwise autoregression algorithms may be used in forecasting. With the stepwise autoregression, a time trend is found and the differences between the actual data and the trend line are computed. These residuals are then fit using autoregressive estimation.

Section 2: Forecasting models

The following is a list of candidate forecasting models facilitated by the SAS Time Series Forecasting system:

1. **Exponential smoothing**
   - simple exponential
   - double exponential
   - linear exponential
   - damped-trend linear exponential
   - seasonal exponential.
2. **Winters smoothing, additive and multiplicative**
3. **Box-Jenkins ARIMA models, including seasonal ARIMA models**
4. **Predictor variables**
   - simple regressors
   - seasonal dummy variable regressors
   - intervention (dummy) variables to model exceptional events, level shifts, or trend shifts
   - adjustment variables to adjust the forecasts by fixed amounts at each period
   - transfer functions or dynamic regression: use transformations, lags, or time series filters to model the impact of predictor variables.
5. **Automatic and user specified forecasting models for predictor variables**
6. **Time trend models**
   - linear
   - quadratic
   - cubic
   - logistic
   - logarithmic
   - exponential
   - hyperbolic
   - power function
   - exp(A+B/time).

7. **Data transformations**
   - logarithmic
   - logistic
   - square root
   - Box-Cox.
8. **Combining or average the predictions of other forecasting models**
9. **External (judgmental) forecasts**
10. **Customised models**

Section 3: Statistics of fit

This section explains the goodness-of-fit statistics reported to measure how well different models fit the data.

The various statistics of fit reported are as follows. In these formula, n is the number of non-missing observations and k is the number of fitted parameters in the model.

Number of Non-Missing Observations
The number of non missing observations used to fit the model.

Number of Observations
The total number of observations used to fit the model, including both missing and non missing observations.

Number of Missing Actuals
The number of missing actual values.

Number of Missing Predicted Values
The number of missing predicted values.

Number of Model Parameters
The number of parameters fit to the data. For combined forecast, this is the number of forecast components.

Total Sum of Squares (Uncorrected)
The total sum of squares for the series, SST, uncorrected for the mean: $\sum_{t=1}^{n} y_t^2$.

Total Sum of Squares (Corrected)
The total sum of squares for the series, SST, corrected for the mean: $\sum_{t=1}^{n} \left(y_t - \overline{y}\right)^2$, where $\overline{y}$ is the series mean.

Sum of Square Errors
The sum of the squared prediction errors, SSE, $SSE = \sum_{t=1}^{n} \left(y_t - \hat{y}_t\right)^2$, where $\hat{y}$ is the one-step predicted value.

Mean Square Error.
The mean squared prediction error, MSE, calculated from the one-step-ahead forecasts. MSE = [1/n] SSE. This formula enables you to evaluate small holdout samples.

Root Mean Square Error
The root mean square error (RMSE), $\sqrt{MSE}$.

Mean Absolute Percent Error
The mean absolute percent prediction error (MAPE), $\frac{100}{n}\sum_{y=1}^{n}\left|\left(y_t - \hat{y}_t\right)/ y_t\right|$.
The summation ignores observations where $y_t = 0$.

Mean Absolute Error
The mean absolute prediction error, $\frac{1}{n}\sum_{t=1}^{n}\left|y_t - \hat{y}_t\right|$.

R-Square
The R^2 statistic, $R^2 = 1\text{-}SSE / SST$. If the model fits the series badly, the model error sum of squares, *SSE*, may be larger than *SST* and the R^2 statistic will be negative.

Adjusted R-Square
The adjusted R^2 statistic, 1 - ([(*n*-1)/(*n*-*k*)]) (1- R^2).

Amemiya's Adjusted R-Square
Amemiya's adjusted R^2, 1 - ([(*n*+*k*)/(*n*-*k*)]) (1 - R^2).

Random Walk R-Square
The random walk R^2 statistic (Harvey's R^2 statistic using the random walk model for comparison), 1 - ([(*n*-1)/*n*]) *SSE / RWSSE*, where

$RWSSE = \sum_{t=2}^{n}\left(y_t - y_{t-1} - \mu\right)^2$, and $\mu = \frac{1}{n-1}\sum_{t=2}^{n}\left(y_t - y_{t-1}\right)$.

Akaike's Information Criterion
Akaike's information criterion (AIC), $n \ln(MSE) + 2k$.

Schwarz Bayesian Information Criterion
Schwarz Bayesian information criterion (SBC or BIC), $n \ln(MSE) + k \ln(n)$.

Amemiya's Prediction Criterion
Amemiya's prediction criterion, [1/*n*] *SST* ([(*n*+*k*)/(*n*-*k*)])(1- *R2*) = ([(*n*+*k*)/(*n*-*k*)]) [1/*n*] *SSE*.

Maximum Error
The largest prediction error.

Minimum Error
The smallest prediction error.

Maximum Percent Error
The largest percent prediction error, $100 max\left(\left(y_t - \hat{y}_t\right)/ y_t\right)$.
The summation ignores observations where $y_t = 0$.

Minimum Percent Error
The smallest percent prediction error, $100 \min\left(\left(y_t - \hat{y}_t\right)/ y_t\right)$.
The summation ignores observations where $y_t = 0$.

Mean Error
The mean prediction error, $\frac{1}{n}\sum_{t=1}^{n}\left(y_t - \hat{y}_t\right)$.

Mean Percent Error
The mean percent prediction error, $\frac{100}{n}\sum_{t=1}^{n}\frac{\left(y_t - \hat{y}_t\right)}{y_t}$

The summation ignores observations where $y_t = 0$.

Information presented above was extracted from the SAS Forecasting System documentation.

Glossary

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Glossary

Aircraft movement	Aircraft take-off or landing.
ASGC Remoteness	Based on Accessibility/Remoteness Index of Australia (ARIA) index, the classification grouped census.
Classification	Collection Districts (CDs) into five remoteness classes which broadly divided Australia into five regions.
Accessibility/Remoteness Index of Australia (ARIA)	ARIA measures remoteness by calculating the physical road distance between where people live and the service centres those people travel to in other to obtain goods and services. There are five categories of service centres. The population size of the service centre is used as a proxy for the availability of a range of services and the road distance is used as a proxy for the degree of remoteness from those services.
Australian and New Zealand Standard Industrial Classification (ANSIC)	A four-level hierarchical structured classification for categorising business statistical units by industry in official statistics. Businesses are assigned to an industry according to their predominant economic activity. The classification ensures each unit is classified to the same industry in all statistical collections in which it is included and that industry statistics are comparable across surveys.
Australian Standard Geographic Classification (ASGC)	A hierarchical geographic statistical classification system. The ASGC comprises six interrelated classification structures (ABS 2001b). The principal ASGC structures used within this publication are state and territory (S/T) and Statistical Local Areas (SLA).
Available Seat Kilometre (ASK)	Calculated by multiplying the number of seats available on each flight stage by the Great Circle Distance (GCD) in kilometres between the airports.
Break-even load factor	The load factor necessary for the airline to financially break even. It is a function of the percentage of seats filled at a particular yield versus the airline's operating costs.
City pair statistics	Aggregates of all traffic on each flight stage between two directly connected airports (based on Traffic On Board—TOB data).
Distances	Used throughout are Great Circle Distances expressed in kilometres.

Employed/labour force

For census purposes, the labour force includes people aged 15 years and over who:

- work for payment or profit, or as an unpaid helper in a family business, during the week prior to census night
- have a job from which they are on leave or otherwise temporarily absent
- are on strike or stood down temporarily
- do not have a job but are actively looking for work and available to start work.

The following people are classified as being in the labour force:

- employed (i.e. the first three groups above)
- unemployed (i.e. the last group above).

People aged 15 years and over who are neither employed nor unemployed are classified as not in the labour force. This includes people who are retired, pensioners and people solely engaged in home duties (ABS 2001a).

Employed full-time

Employed people who usually worked 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours during the week prior to census night.

Employed part-time

Employed people who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work in the week prior to census night.

Forecast

To calculate or predict (some future event or condition) usually as a result of study and analysis of available pertinent data. To indicate as likely to occur. (Merriam Webster Inc. 2000).

Flight stage

The operation of an aircraft from take-off to landing.

Great Circle Distance (GCD)

The shortest distance between any two points on the globe, measured over the Earth's surface.

High capacity aircraft

Aircraft with over 38 seats capacity or over 4200 kg.

Hours worked

The number of hours worked in all jobs held during the week before census night, by employed people aged 15 years and over. This excludes any time off but includes any overtime or extra time worked.

Hours worked, when used in combination with Labour Force Status, provides information on full-time and part-time employment. For census purposes, a person is considered to be working full-time if they worked 35 hours or more in all jobs during the week prior to the week prior to census night (ABS 2001a).

Individual income (weekly)	The gross income received each week by a person aged 15 years or over, which is the income before tax, superannuation, health insurance, or other deductions are made. Gross income includes family payments, additional family payments, unemployment benefits, student allowances, maintenance(child support), superannuation, wages, salary, overtime, dividends, rents received, interest received, business or farm income (less operating expenses) and workers' compensation received (ABS 2001a).
Individual manufacturing income (weekly)	The gross income received each week by a person who is aged 15 years or over from the manufacturing industry, under the Australian and New Zealand Standard Industrial Classification (ANSIC).
Inner regional Australia	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value greater than 0.2 and less than or equal to 2.4 are classified as Inner regional Australia.
Labour force status	A classification of population aged 15 years and over into employed, unemployed or not in the labour force.
Locality	A population cluster of between 200 and 999 people (ABS 1998).
Load factor	The total revenue passenger kilometres performed as a percentage of the total available seat kilometres.
Low capacity aircraft	Aircraft with 38 seats capacity or less or 4200kg or less.
Major cities	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value of 0 to 0.2 are classified as major cities.
Mean weekly individual income	The average income value which adds up all gross individual weekly incomes in a UC/L and dividing the result by the people in the UC/L.
Mean weekly individual manufacturing income	The average income value which adds up all individual income from manufacturing in a UC/L and dividing the result by the people who were employed in manufacturing industry located in the UC/L.
Metropolitan area	All major cities under the definition of ASCG Remoteness Classification.
Non metropolitan area	See regional areas.
Outer regional Australia	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value greater than 2.4 and less than or equal to 5.92 are classified as Outer regional Australia.

Passenger movements	Revenue passengers carried.
Projection	An estimate of future possibilities based on a current trend (Merriam Webster Inc. 2000).
Regional area	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value of greater than 0.2 are classified as regional areas. In terms of ASGC remoteness classes, inner regional Australia, outer regional Australia, remote Australia and very remote Australia constate the defined regional areas in this report.
Regional airports	All airports located in regional areas as defined by the ASCG Remoteness Area Classification
Regional air routes	All air routes which provide regular scheduled air services either to or from regional areas as defined by the ASCG Remoteness Area.
Regional air services	Refers to any passenger travel to and/or from a non-metropolitan area, including travel between non-metropolitan areas to metropolitan areas as well as services linking non-metropolitan areas with other non-metropolitan areas.
Regional public transport	This report has defined regional public transport services as all public transport services to and/or from a non-metropolitan region. This definition includes services linking non-metropolitan areas to metropolitan areas as well as services linking non-metropolitan areas with other non-metropolitan areas.
Regular public transport services (RPT)	All transport services operated for the transport of members of the public, for hire or reward and which are conducted in accordance with fixed schedules to and from fixed terminals, over specific routes, with or without intermediate stopping places between terminals. Charter or other non-scheduled passenger transport operations are excluded.
Remote Australia	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value greater than 5.92 and less than or equal to 10.53 are classified as remote Australia.
Revenue passengers	Passengers who pay for any level of fare on regular public transport services.
Revenue Passenger Kilometres (RPK)	Calculated by multiplying the number of revenue passengers travelling on each flight stage, by the Great Circle Distances between the airports.

State and territory (S/T)	States and Territories are the largest spatial unit in the Australian Standard Geographic Classification (ASGC) main structure. Six states and five territories are recognised in the ASGC structure: New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania, Northern Territory, Australian Capital Territory, Jervis Bay Territory, and the external territories of Christmas Island and Cocos (Keeling) Islands (ABS 2001b).
Statistical Division (SD)	A general purpose spatial unit, in the Australian Standard Geographic Classification (ASGC), and largest and most stable spatial unit within each state and territory (S/T). SDs consist of one or more Statistical Subdivisions (SSD) and aggregate to form S/Ts (ABS 2001b).
Statistical Local Area (SLA)	A general-purpose spatial unit in the Australian Standard Geographic Classification (ASGC). It is the base spatial unit used to collect and disseminate statistics other than those collected from the Population Censuses. SLAs aggregate to form the larger spatial units Statistical Subdivisions (SSD) in the ASGC main structure (ABS 2001b).
Statistical Subdivision (SSD)	A general purpose spatial unit in the Australian Standard Geographic Classification (ASGC) of intermediate size between the Statistical Local Areas (SLA) and Statistical Divisions (SD). SSDs consist of one or more SLAs and aggregate to form SDs (ABS 2001b).
Traffic on Board (TOB)	The number of revenue passengers on board for each flight stage.
Uplift Discharge (UD)	The number of revenue passengers on a particular flight as identified based on the flight number allocated by an airline.
Urban centre	A population cluster of 1000 or more people (ABS 2001b).
Very remote Australia	Under the ASCG Remoteness Classification, Census Collection Districts (CDs) with an average ARIA Index value greater than 10.53 are classified as very remote Australia.

Abbreviations

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Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
ANSIC	Australian and New Zealand Standard Industrial Classification
ASK	Available Seat Kilometres
ATS	Air Transport Statistics
BTE	Bureau of Transport Economics (forerunner to BITRE)
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BTRE	Bureau of Transport and Regional Economics (forerunner to BITRE)
CDs	Census Collection Districts
DOTARS	Department of Transport and Regional Services
GCD	Great Circle Distance
GIS	Geographic Information System
NSW	New South Wales
NT	Northern Territory
OD	Origin Destination
QLD	Queensland
RAAA	Regional Aviation Association of Australia
RAFP	Regional Airports Funding Program
RASS	Remote Air Service Subsidy Scheme
REX	Regional Express
RPK	Revenue Passenger Kilometres
RPT	Regular Public Transport
SA	South Australia
SAS	Statistical Analysis Software
TAS	Tasmania
TOB	Traffic On Board
UC/Ls	Urban Centres/Localities
UD	Uplifts and Discharges
VIC	Victoria
WA	Western Australia

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